DECENNIAL INDEX

RUBBER CHEMISTRY AND TECHNOLOGY

1958–1967

AUTHOR INDEX

ABE, M., Y. MURAKAMI, AND H. FUJITA, Sedimentation analysis of *cis*-1,4-polybutadiene in a theta solvent, 3-pentanone, at 10.3°C, **39** 609
ADAMS, H. E., R. S. STEARNS, W. A. SMITH, AND J. L. BINDER, *Cis*-1,4 polyisoprene prepared with alkyl aluminum and titanium tetrachloride, **31** 838
ADAMS, R., Wallace Hume Carothers, **37**(1)xxviii
AKERSTROM, S., Determination of tetramethylthiuram disulfide, **36** 305
AKKERMAN, F. H. D., Flexcracking of polymers, **37** 186
AKUTIN, M. S., see KOVARSKAYA, B. M., **33** 964
AL'BAM, M. A. AND A. P. PISARENKO, Role of pressure and amount of blowing agent in molding microporous footwear parts, **33** 1193
Apparatus for study of pore formation kinetics in vulcanization, **34** 357
ALBIN, J. R., see WOLFE, J. R., JR., **37** 927
ALEKSEENKO, V. I., L. A. BOGOSLAVSKAYA, AND I. U. MISHUSTIN, Compatibility as the basic factor in the adhesion of high molecular weight materials, **32** 519
ALLCROFT, J. B., see STAFFORD, W. E., **31** 202
ALLEN, G., see BAKER, C. H., **40** 1544
ALLEN, G., U. BIANCHI, AND C. PRICE, Thermodynamics of elasticity of natural rubber, **37** 606
——, AND H. G. CROSSLEY, Polypropylene oxide. IV. Preparation and properties of polyether networks, **40** 1421
——, AND D. SIMS, Intermolecular forces and chain flexibilities. IV. Internal pressures of polyethylene glycol in the region of its melting point, **36** 1000
ALLEN, P. W., The swelling behavior of natural rubber latex, **32** 809
——, C. L. M. BELL, AND E. G. COCKBAIN, Polymerization of vinyl monomers in rubber latexes, **33** 825
——, AND G. M. BRISTOW, Light scattering measurements on solutions of natural and synthetic polyisoprenes, **34** 446
——, AND G. M. BRISTOW, The gel phase in natural rubber, **36** 1024
ALMOND, C. Y., Nitrile rubbers and vinyl polymer mixtures, **35** 716
ALTIER, M. W., see MORTON, M., **32** 814
AMATO, F., see M. BRUZZONE, **39** 1593
AMBELANG, J. C., K. C. BEACH, AND D. F. O'SULLIVAN, Temperature coefficient of vulcanization for present-day tire compounds, **35** 92
——, R. H. KLINE, O. M. LORENZ, C. R. PARKS, AND C. WADELIN, Antioxidants and antiozonants for general purpose elastomers, **36** 1497
AMBERG, L. O., see ROBINSON, A. R., **35** 1083
AMUNDSON, N. R., see LIU, S., **34** 995
ANDERSON, H. R., JR., Vulcanization of SBR in a thermal neutron field, **33** 1083
Compounding SBR for radiation resistance, **34** 228
——, see ARNOLD, P. M., **34** 265
ANDERSON, R. K., see PATTERSON, R. G., **38** 832
ANDRESEN, A., The influence of high-activity silica upon the thermal aging of latex vulcanizates cured by thiuram compounds, **34** 834
ANDREWS, E. H., Stress waves and fracture surfaces, **33** 275
Crack propagation in a strain-crystallizing elastomer, **35** 210
Reinforcement of rubber by fillers, **36** 325
Stresses at a crack in an elastomer, **36** 777
Spherulite morphology in thin films of natural rubber, **38** 33
Crystalline morphology in thin films of natural rubber: crystallization under strain, **38** 45
ANDRONOVA, G. I., see TARASOVA, Z. N., **38** 666
ANGERT, L. G., A. I. ZENCHENKO, AND A. S. KUZMINSKII, Volatilization of phenyl-2-naphthylamine from rubber, **34** 807
ANGIER, D. J. AND W. F. WATSON, Mastication. V. Separation and structural investigation of natural rubber-polymethyl methacrylate interpolymers formed by mastication, **31** 58
ANGIER, D. J., W. T. CHAMBERS, AND W. F. WATSON, Mastication of rubber. VI. Viscosity and molecular weight relationships for natural rubber after cold mastication, **31** 73
ANGIER, D. J. AND E. M. FETTES, Role of elastomers in impact-resistant polystyrene, **38** 1164
ANGIOLETTI, A., S. ECCHER, O. POLVARA, AND V. ZERBINI, Rubber birefringence and photoelasticity, **38** 1115
——, AND U. FELICE, Some factors which determine the flight of sounding balloons, **31** 211
ANGOVE, S. N., E. S. GRAHAM, G. HILDITCH, R. A. STEWART, AND F. L. WHITE, High quality foams from NIR latex, **39** 755
ANOSHINA, N. P., see TEITEL'BAUM, B. YA., **40** 458
ANIKANOVA, K. F., G. E. BETTS, V. G. ZHAKOVA, N. F. KOMSKAYA, B. K. KARMIN, L. S. PRISS, M. M. REZNIKOVSKIY, L. A. CHERNIKINA, AND E. B. SHETEYN, SKI rubber, polyisoprene, similar to natural rubber, **31** 30

36 = 1963, **37** = 1964, **38** = 1965, **39** = 1966, **40** = 1967

Anspach, W. F., Hydrofluorocarbon high-temperature integral fuel tank sealants, 39 1200
Anthony, R. L., see Hewitt, F. G., 32 428
Apukhtina, N. P., see Myuller, B. E., 38 452
Arakawa, M., see Suito, E., 38 219, 227
Archer, B. L., D. Barnard, E. G. Cockbain, J. W. Cornforth, R. H. Cornforth, and G. Popják, Stereochemistry of rubber biosynthesis, 40 679
Arcozzi, R., see Crespi, G., 38 590
Arends, C. B., Cold flow in high impact polystyrene, 40 1516
Arenzon, N. M., see Buiko, G. N., 33 556
Arnold, P. M., G. Kraus, and R. H. Anderson, Jr., Vulcanization of SBR bv gamma radiation, 34 265
Arzhahov, S. A., see Igonin, L. A., 32 527
Assonova, T. V., see Trapenznikov, A. A., 33 921
Atkins, J. H. and B. B. Boonstra, A measurement of carbon black pellet quality and its significance, 39 1081
Auer, E. E., K. W. Doak, and I. J. Schaffner, Factors affecting laboratory cut-growth resistance of cold SBR tread stocks, 31 185
Aufdermarsh, C. A., Jr. and R. Pariser, *Cis*-polychloroprene, 38 526
Auler, H., Analysis of antioxidants and accelerators in rubber compounds and vulcanizates, 37 950
——, and S. Bostrom, Diffusion of sulfur 35 in rubber. Effect of carbon black loading on sulfur migration from the breakers in large tires, 35 621
Aupetit, A., Determination of the surface tension of latex, 38 170
Auterinen, E., see Soininen, A., 36 516

Babitskii, B. L., see Levitin, I. A., 32 889, 1675
Bachmann, J. H., J. W. Sellers, M. P. Wagner, and R. F. Wolf, Fine particle reinforcing silicas and silicates in elastomers, 32 1286
Bachmann, J. H., see Sellers, J. W., 34 729
Backus, J. K., see Saunders, J. H., 39 461
Bahary, W. S., D. I. Sapper, and J. H. Lane, Structure of polybutadienes, 40 1529
Baker, C. H., C. S. Clemson, and G. Allen, Polymer fractionation at a lower critical solution temperature phase boundary, 42 1544
Baker, H. C. and R. M. Foden, Recent developments in superior processing natural rubber, 33 810
Bakharev, B. I., see Blokh, G. A., 32 770
Baldi, L., and R. Zannetti, Solubility and mobility of sulfur in ethylene propylene and ethylene butene-1 copolymers, 36 660
——, see Ballini, G., 39 521
——, see Zannetti, R., 36 459
Baldyga, H., and H. C. Jones, Effect of zinc oxide and titanium dioxide on heat and light stability of ethylene propylene terpolymers, 39 1347
Ballini, G., L. Baldi, and E. di Giulio, Use of C^{14} tagged cumyl peroxide to study peroxide vulcanization of ethylene propylene copolymers, 39 521
Balta, Y. I., see Krigbaum, W. R., 40 788
Banerjee, D., see Bhaumik, M. L., 36 1059
——, see Chatterjee, P. K., 35 665
Banerjee, S., see Bhatnagar, S. K., 38 961
——, see Jose, K. A., 39 763
——, see Saxena, K. K., 36 561
——, see Saxena, K. K., 38 212
——, see Taneja, H. L., 37 557
Banks, S. A., F. Brzenk, J. A. Rae, and C. S. Hwa, Effect of intracarcass pressure buildup on tubeless tire performance, 38 158
Baramboim, N. K. and V. I. Popov, Mechanochemical modification of polybutadiene (SKB) by maleic anhydride, 36 803
Barker, M. G., see Uraneck, C. A., 38 802
Barnard, D., Ozonolytic degradation of interpolymers of natural rubber with methyl methacrylate and styrene, 31 82
——, see Archer, B. L., 40 679
Barnhart, R. R., see Hunter, B. A., 33 510
Barrall, E. M., R. S. Porter, and J. F. Johnson, Characterization of block and random ethylene propylene copolymers by differential thermal analysis, 39 1513
Barrer, R. M., J. A. Barrie, and N. K. Raman, Solution and diffusion in silicone rubber. I. A comparison with natural rubber, 36 642
II. Influence of fillers, 36 651
Barrie, J. A. and B. Platt, Sorption and diffusion in crystalline elastomers. I. Solubility of isomeric hydrocarbons in stretched rubber, 35 153
II. Permeation of isomeric hydrocarbons in stretched rubber, 35 166
——, see Barrer, R. M., 36 642, 651
Bartenev, G. M., Two stages in the process of network formation in polymers, 31 592
Rubber structure and coefficient of friction, 35 371
——, and Y. A. Gorbatkina, Some correlations in the second order transition or rubbers, 34 1193
——, and G. S. Kongarov, Dilatometric determination of polymer compatibility, 36 668
——, and V. V. Lavrentev, Nature of static friction in elastomers, 34 461
Law of rubber friction, 34 1162
Law of friction for surfaces in elastic contact, 36 64
——, and I. V. Razumovskaya, Theoretical strength and critical rupture strength of solids, 35 178
——, and Z. E. Styran, Effects of type of rubber, temperature, and degree of crosslinking on the friction properties of elastomers, 33 1166
——, and L. A. Vishnitskaya, Law of deformation of cured rubber, 36 59
——, and V. D. Zaitseva, Dynamic vitrification and the activation energy of rubber polymers, 34 1201
——, and Y. V. Zelenev, Temperature and frequency dependence of the dynamic deformation and losses of elastomers, 36 709
——, see Zarharenko, N. V., 35 326

31 = 1958, 32 = 1959, 33 = 1960, 34 = 1961, 35 = 1962

BARTHOLOMEW, E. R., G. RICHARD EYKAMP, AND W. E. GIBBS, High temperature elastomeric compounds and polymers, **32** 1587
BASEDEN, G. A., Compounding an ethylene propylene terpolymer elastomer for dynamic applications, **38** 967
BASHKATOV, T. V., see SHATALOV, V. P., **32** 701
BASK, W., see SOININEN, A., **37** 477
BASSI, A. C., Measurements of friction of elastomers by the skid resistance tester, **38** 112
BATEMAN, L., R. W. GLAZEBROOK, AND C. G. MOORE, The reaction of sulfur with 2,6-dimethylocta-2,6-diene, **31** 1065
Effects of vulcanizing additives on the reaction of sulfur with 2,6-dimethylocta-2,6-diene, and their bearing on the mechanism of sulfur vulcanization of natural rubber, **35** 633
———, M. PORTER, G. W. ROSS, AND R. W. SAVILLE, The reaction of sulfur with mono-olefins, **31** 1055
——, C. G. MOORE, AND M. PORTER, The mechanism of interaction of sulfur with mono-olefins and 1.5-dienes, **31** 1090
——, AND B. C. SEKHAR, Significance of PRI in raw and vulcanized natural rubber, **39** 1608
BAUMAN, R. G., Mechanism of radiation damage to elastomers. II. Crosslinking and antirad action, **33** 483
——, AND J. W. BORN, The mechanism of radiation damage to elastomers. I. Chain scission and antirad action, **33** 476
BAWN, C. E. H., D. G. T. COOPER, AND A. M. NORTH, Homogeneous polymerization of butadiene catalyzed by rhodium salts, **40** 602
BEACH, K. C., see AMBELANG, J. C., **35** 92
BEAN, C. T., see DORFMAN, E., **39** 1175
BEARMAN, M. Y. AND R. J. BEARMAN, Heats of transport of the rare gases in a rubber membrane, **40** 1156
Isothermal permeabilities from thermoosmosis experiments, **40** 1409
BEARMAN, R. J., see BEARMAN, M. Y., **40** 1156, 1409
BEATTIE, W. H. AND C. BOOTH, Intrinsic viscosity, molecular weight relationship for *cis*-1,4-polyisoprene, **36** 1035
BEATTY, J. R., Fatigue of rubber, **37** 134.
——, AND A. E. JUVE, Rotating ring crack growth test, **38** 719
——, see JUVE, A. E., **33** 98
BECK, H. N., see YERRICK, K. B., **37** 261
BECKER, R. O., Heat resistance of neoprene vulcanizates, **37** 76
BECKER, R. O. AND K. L. SELIGMAN, Stabilization of neoprene. I. Protection of latex film against discoloration by light, **34** 856
BEERBROWER, A., D. A. PATTISON, AND G. D. SAFFIN, Predicting elastomer-fluid compatibility for hydraulic systems, **37** 246
BELIATSKAYA, O. N., see DOGADKIN, B. A., **33** 361
BELL, C. L. M., Oxidative scission of natural polyisoprenes in solution, **39** 530
Oxidative stress relaxation of natural vulcanizates at high strains, **39** 1577
——, M. E. CAIN, D. J. ELLIOTT, AND B. SAVILLE, Recent studies in the aging of natural rubber, **39** 1565
——, see ALLEN, P. W., **33** 825
BELL, M. D., see COLLINS, R. L., **33** 993
BELLANCA, C. L. AND I. O. SALYER, Effect of liquid rocket fuels and oxidizers on elastomeric O-ring seals, **39** 1215
BELLINI, G., see DI GIULIO, E., **39** 726
BELONOVSKAYA, G. P., B. A. DOLGOPLOSK, AND Z. D. CHERNOVA, Oxidation of $TiCl_3$ in hydrocarbon and aqueous media, **37** 128
——, see DOLGOPLOSK, B. A., **32** 321
BELT, R. F., see SEMON, W. L., **31** 847
BELYAEVA, E. N., see DOGADKIN, B. A., **33** 199, 373; **38** 204
BELYANIN, V. B., see DOGADKIN, B. A., **36** 1019
——, see TUTORSKII, I. A., **36** 1019
BELYATSKAYA, O. N., see DOGADKIN, B. A., **35** 501, 509
BENDERS, J. F., see VAN AMERONGEN, G. J., **31** 650
BENISKA, J. AND B. A. DOGADKIN, Influence of activators on the vulcanization process. I. The influence of zinc oxide on the rate of combination of sulfur with rubber, **32** 774
II. Influence of zinc oxide on the structure of vulcanizates, **32** 780
——, see DOGADKIN, B., **31** 329
BENNETT, B., see KELL, R. M., **31** 499
——, see SLIEMERS, F. A., **33** 535
BENNETT, J. V., R. W. PEARSON, AND I. G. MILLS, New techniques for radiation vulcanization, **38** 94
BEREK, D., see LAZAR, M., **36** 527
——, see MANASEK, Z., **36** 532
BERESTNEV, V. A., see GUL, V. E., **32** 668
BERGER, M. AND D. J. BUCKLEY, Structure effects and related polymer properties in polybutadiene. I. Preparation and characterization **37** 169
BERGER, S. E. AND W. SZUKIEWICZ, High performance toluene diisocyanate polypropylene glycol castable elastoplastics, **38** 150
BERLIN, A. A., Mechanochemical transformation and synthesis of polymers, **34** 215
——, Z. V. POPOVA, AND D. M. YANOVSKII, Influence of polymers with conjugated bond systems on the stability of polyvinylchloride, **33** 1188
——, A. G. KRONMAN, D. M. YANOVSKII, AND V. A. KARGIN, Graft polymers from PVC and rubber, **34** 760
——, see BUTYAGIN, P. Y., **33** 942
BERMAN, B. Z., see PECHKOVSKAYA, K. A., **36** 156
BERNSTEIN, B., E. A. KEARSLEY, AND L. J. ZAPAS, Study of stress relaxation with finite strain, **38** 76
BERNTSEN, R. A., see ERICKSON, E. R., **32** 1062
BERTRAM, H.-H., Mold release agents in the rubber industry, **36** 1148
BESTUL, A. B., Energy requirements of mechanical shear degradation in concentrated polymer solutions, **33** 909
BETTS, G. E., see ANIKANOVA, K. F., **31** 30
BEVILACQUA, E. M., Efficiency of TMTD vulcanization, **31** 559
End groups of oxidized rubber, **31** 86

Vulcanization with TMTD, **32** 721, 1675
Degradation of polyisoprene networks by oxygen, **33** 51
Oxidation of hevea vulcanizates containing carbon black, **33** 60
Space and style in RUBBER CHEMISTRY AND TECHNOLOGY, **38**(4)x
Effects of oxygen on natural rubber latex, **38** 1214
——, AND H. E. HAXO, Publication *vs.* presentation, **40**(3)xi
——, AND W. J. WENISCH, Aging of SBR, **38** 647
BHACCA, N. S., see GOLUB, M. A., **36** 315
BHATNAGAR, S. K. AND S. BANERJEE, Viscosity and molecular weight of masticated styrene butadiene rubber, **38** 961
BHAUMIK, M. L., D. BANERJEE, AND A. K. SIRCAR, Studies of the hard rubber reaction. I. Heat of reaction, **36** 1059
BIANCHI, E., see BIANCHI, U., **38** 343
BIANCHI, U. AND E. BIANCHI, A transition in *cis*-1,4-polybutadiene, **38** 343
——, see ALLEN, G., **37** 606
——, see PEDEMONTE, E., **38** 347
BIDDISON, P. H., see SCHMIDT, E., **34** 433, 1228
——, see STAVELY, F. W., **34** 423
BIELSTEIN, G., Some aspects of high temperature vulcanization, **34** 319
BIGGS, B. S., Protection of rubber against atmospheric ozone-cracking, **31** 1015
BILLS, K. W., JR. AND F. S. SALCEDO, Swelling of unfilled and highly filled polymers, **35** 284
——, AND J. H. WIEGAND, Relation of mechanical properties to solid rocket motor failure, **37** 524
BINDER, J. L., Applications of infrared spectroscopy to polymers, particularly 1,3 diene polymers, **35** 57
Infrared spectra of polybutadienes, **39** 945
——, see ADAMS, H. E., **31** 838
——, see STAVELY, F. W., **34** 423
BINGHAM, W. R., see KELLY, R. J., **35** 1101
BISCHOF, K., see GROHN, H., **34** 474
BISHOP, W. A., Sulfur-induced *cis-trans* isomerization of polybutadiene **35** 536
BISIO, A. L., see SHEEHAN, C. J., **39** 149
BLACK, A. L., see SMITH, R. W., **37** 338
BLATZ, P. J., Energy storage and dissipation by flexible macromolecules, **40** 1446
Application of finite elastic theory to the behavior of rubberlike materials, **36** 1459
——, see KAWABATA, S., **39** 923
BLOKH, G. A., Use of radioactive sulfur in vulcanization, **31** 1035
Electron paramagnetic resonance investigation of vulcanization, **33** 1005
Lability of sulfur atoms in vulcanization, **33** 1010
——, V. Y. DEMIDIONOVA, G. P. MIKLUKHIN, I. I. KUKHTENKO, A. F. REKASHEVA, R. V. NIKULINA, AND M. I. PRZHEBYLSKII, Migration and distribution of radioactive sulfur in compounded rubber, **33** 1015
——, Z. P. KORNILTSEVA, L. A. OLSHANSKAYA, AND V. N. KOLOBENIN, Radioactive tracing of the diffusion of sulfur in cable rubbers, **31** 356
——, Z. P. KORMILZEVA, D. B. BOGUSLAVSKII, B. I. BAKHAREV, AND B. P. TIKHOMIROV, Diffusion processes in the vulcanization of tire stocks, **32** 770
——, AND A. F. MALNEV, Infrared spectra of cured and uncured rubbers, **32** 628
——, AND C. L. MELAMED, Interaction of carbon black with sulfur, MBT, and TMTD in vulcanization, **34** 588
——, I. E. NEIMARK, K. N. BORODUSHKHINA, D. B. BOGUSLAVSKII, Y. G. SHEVCHENKO, Molecular sieves in the vulcanization of rubber, **37** 714
—— AND A. G. YAROSHEVICH, Interaction between carbon black and sulfur during vulcanization, **32** 118
BLUMEL, H., Molecular structure and properties of polybutadiene rubbers, **37** 408
BLY, R. M., P. E. KIENER, AND B. A. FRIES, Near infrared analysis of ethylene propylene copolymers, **39** 956
BLYUMENFELD, L. A., see BUTYAGIN, P. Y., **33** 942
BOBEAR, W. J., Elastic properties and network structure in silicone gum vulcanizates, **40** 722
Chain density in rubber networks, **40** 1560
BOENIG, H. V., C. B. MILLER, AND J. E. SHOTTAFER, Tack in urethan elastomers, **39** 974
BOGOSLAVSKAYA, L. A., see ALEKSEENKO, V. I., **32** 519
BOGUSLAVSKII, D. B., see BLOKH, G. A., **32** 770; **37** 714
BOLDYREVA, I. I., B. A. DOLGOPLOSK, E. N. KROPACHEVA, AND K. V. NEL'SON, *Cis-trans* isomerization of natural rubber under the influence of hydrogen chloride or ethylaluminum dichloride, **33** 985
BOLT, T. D., E. M. DANNENBERG, R. E. DOBBIN, AND R. P. ROSSMAN, Carbon black structure effects in synthetic rubbers, **34** 1141
—— AND E. M. DANNENBERG, Effects of carbon black structure on tire tread wear, **34** 43
BONOMI, G., see FIORENZA, A., **36** 1119; **36** 1129; **37** 741
BOONE, J. L. AND S. A. BRALEY, Resistance of silicone rubbers to body fluids, **39** 1293
BOONSTRA, B. B. S. T. AND E. M. DANNENBERG, Swelling behavior of rubbers compounded with reinforcing pigments, **32** 825
—— AND A. I. MEDALIA, Effect of carbon black dispersion on the mechanical properties of rubber vulcanizates, **36** 115
——, AND G. L. TAYLOR, Swelling of filled rubber vulcanizates, **38** 943
——, see ATKINS, J. H., **39** 1081
——, see COTTEN, G. R., **40** 829
BOOR, L., M. HANOK, F. S. CONANT, AND W. E. SCOVILLE, JR., Rheological testing of elastomers at low temperatures. Part II, **33** 1114
BOOTH, C., Mechanical degradation of polymers, **38** 509
——, G. GEE, G. HOLDEN, AND G. R. WILLIAMSON, Studies in the thermodynamics of polymer, liquid systems. I. Natural rubber and polar liquids, **38** 314
——, G. GEE, M. N. JONES, AND W. D. TAYLOR, Studies in the thermodynamics of polymer, liquid systems. II. A reassessment of published data, **38** 325
——, see BEATTIE, W. H., **36** 1035
BORCHARDT, H. A., Rolling radius of rubber-covered cylinders, **35** 224
BORKOVA, L. V., see KUZMINSKII, A. S., **32** 195

BORN, J. W., see BAUMAN, R. G., **33** 476
BORODINA, V. N., see TAUBMAN, A. B., **36** 143
BORODUSHKHINA, K. N., see BLOKH, G. A., **37** 714
BOROVITSKAYA, N. M., Measurement of the dynamic modulus of rubber at very small amplitudes with an optical interferometer, **33** 272
BORSHCHEVSKAYA, A. Z., see ZUEV, Y. S., **35** 437
BOSTROM, S., see AULER, H., **35** 621
BOUCHER, M., see LEBRAS, J., **31** 849
BOYER, R. F., Relation of transition temperatures to chemical structure in high polymers, **36** 1303
BRADEN, M. AND A. N. GENT, Attack of ozone on stretched rubber vucanizates. I. Rate of cut growth, **33** 1142
II. Conditions for cut growth, **33** 1156
Mechanics of ozone cracking, **35** 200
BRADFORD, E. B., see VANDERHOFF, J. W., **40** 1246
BRAENDLE, H. A., Improving the carbon-rubber bond, **31** 147
BRALEY, S. A., see BOONE, J. L., **39** 1293
BRENNAN, J. J. AND JERMYN, T. E., Correlation of vulcanizate properties with polymer and black interaction, **40** 817
——, see DANNENBERG, E. M., **39** 597
BRESLER, S. E., B. A. DOGADKIN, E. N. KAZBEKOV, E. N. SAMINSKII, AND V. A. SHERSHNEV, Electron spin resonance study of the interaction of tetramethylthiuram disulphide (TMTD) with rubber and related compounds, **34** 318
——, B. A. DOLGOPLOSK, M. F. KOLECHKOVA, AND E. N. KROPACHEVA, Copolymerization of butadiene and isoprene through use of complex organometallic catalysts, **37** 121
——, B. A. DOLGOPLOSK, V. A. KROL, AND S. YA. FRENKEL, Reactions of free radicals in solution. V. Destruction of polymeric molecules by free radicals, **31** 278
——, E. N. KAZBEKOV, AND E. M. SAMINSKII, Study of macroradicals in processes of polymerization and degradation, **33** 469
——, A. A. KOROTKOV, M. I. MOSEVITSKII, AND I. Y. PODDUBNYI, Molecular weight distribution in polymers. Polymerization of isoprene and butadiene with metal organic compounds, **33** 669
——, AND M. I. MOSEVITSKII, Kinetics of isoprene polymerization initiated with $TiCl_4$-trialkyl aluminum, **33** 696
——, M. I. MOSEVITSKII, I. Y. PODDUBNYI, AND N. N. CHESNOKOVA, The mechanism of isoprene polymerization initiated with $TiCl_4$-trialkylaluminum. Molecular weight distribution of the polymer, **33** 689
——, M. I. MOSEVITSKII, I. Y. PODDUBNYI, AND S. GUAN-I, The mechanism which restricts chain growth in polymerization with alkylaluminum-titanium tetrachloride complex catalysts, **34** 986
——, S. N. ZHURKOV, E. N. KAZBEKOV, E. M. SAMINSKII, AND E. E. TOMASHEVSKII, Electron paramagnetic resonance of radicals formed during milling, **33** 462
BREWER, P. I., Liquid chromatographic separations using rubber as the stationary phase, **36** 310
BRIGGS, G. J., D. C. EDWARDS, AND E. B. STOREY, Water absorption of elastomers, **36** 621
Accelerated thermomechanical testing of vulcanizates, **37** 134
BRIGHAN, K., see SCHEELE, W., **31** 301
BRISTOW, G. M., Mastication of elastomers. I. Natural rubber in nitrogen, **35** 896
II. Cold mastication of natural rubber, **36** 102
Use of sol-gel analysis to estimate chain scission during vulcanization. II. Peroxide vulcanization of synthetic *cis*-polyisoprene, **38** 367
Sol-gel analysis to estimate chain scission during cure. I. Peroxide vulcanization of natural rubber, **37** 904
Relation between stress strain behavior and equilibrium volume swelling for peroxide vulcanizates of natural rubber and *cis*-1,4-polyisoprene, **40** 673
——, see ALLEN, P. W., **34** 446; **36** 1024
BROOKS, L. A., Chemistry of thiazoles and dithiocarbamates as antioxidants, **36** 887
BROWN, H. P., Crosslinking reactions of carboxylic elastomers, **36** 931
BROWN, R. J., R. B. KNILL, J. F. KERSCHER, AND R. V. TODD, Compounding of *cis*-1,4-polybutadiene for tire applications, **35** 546
BROWN, R. W., Louis H. Howland, Obituary, **37**(4)xli
——, see HOWLAND, L. H., **34** 1501
BROWNLEE, J. L. AND E. PERRY, Quantitative measurement of tire flatspotting, **40** 1147
BRUCKSCH, W. F., JR., Metal Halides in vinylpyridine rubber (PBR), **35** 453
Vinylpyridine rubber (PBR)-filler interactions. II. **36** 975
BRUNELLE, M. F., see HAAGEN-SMIT, A. J., **32** 1134
BRUZZONE, M. AND G. MODINI, Quantitative relationship between mineral oil composition and elastomer-extender interaction parameter, **37** 451
——, G. CORRADINI, AND F. AMATO, Technological characteristics of polyisoprenes with different 1,4-*cis* contents, **39** 1593
BRZENK, F., see BANKS, S. A., **38** 158
BUCCI, G. AND T. SIMONAZZI, Contribution to the study of ethylene propylene copolymers by infrared spectroscopy. Diffusion of monomeric units, **38** 334
BUCKLER, E. J., Fallacies, fancies, and unexplained facts, **37**(3)xx
BUCKLEY, D. J., Elastomeric properties of butyl rubber, **32** 1475
——, AND S. B. ROBISON, Ozone attack on rubber vulcanizates, **32** 257
——, see BERGER, M., **37** 169
BUECHE, A. M., Ultimate properties of simple elastomers, **31** 19
——, AND D. G. FLOM, Surface friction and dynamic mechanical properties of polymers, **33** 105
BUECHE, F., Mechanical properties of natural and synthetic rubbers, **31** 1
Tensile strength of filled SBR vulcanizates, **32** 680
Tensile strength of elastomers according to current theories, **32** 1269
Mechanical degradation of high polymers, **34** 466
Molecular basis for the Mullins effect, **34** 493
Mullins effect and rubber-filler interaction, **35** 259
——, AND S. W. HARDING, New absolute molecular weight method—linear high polymers, **32** 97
Absolute molecular weight method for linear polymers, **32** 99
——, AND T. J. DUDEK, Tensile strength of amorphous gum rubbers, **36** 1

——, AND J. C. HALPIN, Molecular theory for the tensile strength of gum elastomers, **37** 808
BUECHE, F., see DUDEK, T. J., **37** 818, 894
——, see HALPIN, J. C., **38** 278
BUGROVA, E. G., see BUIKO, G. N., **33** 556
BUIKO, G. N., N. M. ARENZON, A. I. TUMANOVA, N. P. ZINCHENKO, N. A. PRUZHANSKAYA, E. A. PAKOMOVA, A. I. KOLOMYTSEVA, AND E. G. BUGROVA, Factors affecting bond strength between the elements of tires, **33** 556
BUKHINA, M. F., Effect of deformation on the crystallization of supercooled cured and uncured rubbers, **37** 404
BULGIN, D. AND G. D. HUBBARD, Rotary power loss machine, **32** 915
BULLARD, H. L., see SPACHT, R. B., **37** 210; **38** 134
BULLMAN, G. W., see ROTH, F. L., **39** 397
BURAK, I. N., Determination of the molecular weight of SKI-2 rubber, **36** 1042; **37** 583
BURGER, V. L., Analysis of rubber, **32** 1452
BURGESS, K. A., see HESS, W. M., **36** 754
——, see SWEITZER, C. W., **34** 709
BUROW, S. P., A. PETERLIN, AND D. T. TURNER, Upturn effect in the non-Newtonian viscosity of polymer solutions, **39** 631
BUSHICK, R. D., Ethylene propylene copolymers. I. Monomer reactivity ratios, **39** 241
BUSSEMAKER, O. K. F., Tack in rubber, **37** 1178
——, AND W. V. C. VAN BEEK, A new type of tackmeter, **37** 28
BUSWELL, A. G. AND J. T. WATTS, Some factors influencing the ozone resistance of rubbers and methods of evaluation, **35** 421
BUTENUTH, G., Swelling studies of filled and unfilled vulcanizates, **37** 326
——, AND H. WESTLINNING, Experimental findings on the abnormal freezing point depression of swelled cured natural rubber, **37** 311
——, see WESTLINNING, H., **35** 274, 615
BUTYAGIN, P. Y., A. A. BERLIN, A. E. KALMANSON, AND L. A. BLYUMENFELD, Macroradicals in the mechanical degradation of polymers in the glassy state, **33** 942
BYL'EV, V. A. AND V. A. VOSKRESENSKII, On the plasticization of PVC by polyisoprene SKN-40, **37** 770
BYWATER, S., see WORSFOLD, D. J., **38** 627

CAIN, M. E., see BELL, C. L. M., **39** 1565
CAIN, W. P., see MAKOWSKI, H. S., **38** 599
CALDWELL, J. R., see PERRY, K. P., **39** 1008
CALLAN, J. E., see HESS, W. M., **40** 371
CAMPBELL, E. M., see HUNTER, B. A., **33** 510
CAMPBELL, R. H. AND R. W. WISE, Vulcanization. Part I. Fate of curing system during the sulfur vulcanization of natural rubber accelerated by benzothiazole derivatives, **37** 635
Part II. Fate of curing system during sulfur curing of NR accelerated by MBT derivatives and activated by zinc stearate, **37** 650
CANTOW, H. J., see RING, W., **40** 895
CARDEW, K. H. F., see GILES, C. G., **38** 840
CARLSON, L. E., see HAVENHILL, R. S., **36** 176
CARLTON, C. A., Chemical compatibility as a factor in the dispersion of fillers in rubber, **35** 881
CARMICHAEL, J. B. AND J. HEFFEL, Verification of the Flory theory of random reorganization of molecular weight distribution. Kinetics of methylsiloxane polymerization, **40** 769
CARPENTER, A. W., Arthur Edgar Juve, obituary, **39**(1)xxv
CARR, R. L. K., see DORFMAN, E., **39** 1175
CARWILE, L. C. K. AND H. J. HOGE, Thermal conductivity of soft vulcanized natural rubber, selected values, **39** 126
CASE, L. C. AND R. V. WARGIN, Elastomer Behavior IV. Loop structures of elastomer networks, **39** 1489
CERESA, R. J., Mechanochemical modification of high polymers, **33** 923
Mechanochemical reactions leading to reinforcement in rubbers, **33** 929
II. Natural rubber and phenolic resins, **34** 748
CHAI, Y.-K., see SCHEELE, W., **33** 846
CHALFANT, D. L., see SCHOENBERG, E., **37** 103
CHAMBERS, V. S., see HOWLAND, L. H., **32** 706
CHAMBERS, W. T., see ANGIER, D. J., **31** 73
CHANDLER, L. A., see COLLINS, E. A., **39** 193
CHARLESBY, A. AND E. VON ARNIM, Crosslinking of oriented rubber, **31** 98
CHASSET, R. AND P. THIRION, Effect of elongation on the electrical anistropy of natural rubber and SBR vulcanizates containing ISAF carbon black, **35** 317
Viscoelastic relaxation of rubber vulcanizates between the glass transition and equilibrium, **39** 870
——, see DESANGES, H., **31** 631
——, see THIRION, P., **36** 50; **37** 617
CHATTERJEE, P. K., D. BANERJEE, AND A. K. SIRCAR, Determination of thiazole type of rubber accelerators by amperometric titration, **35** 665
——, AND A. K. SIRCAR, Reaction of mercaptobenzothiazole with rubber during mastication, **35** 671
CHEETHAM, I. C. AND W. A. GURNEY, Ozone air velocity factor in ozone cracking, **34** 1220
CHEN, H. Y., Determination of *cis*-1,4 and *trans*-1,4 contents of polyisoprenes by high resolution nuclear magnetic resonance, **38** 90
CHERITAT, R., see PINAZZI, C., **36** 1054, 1056
CHERNIKINA, L. A., see ANIKANOVA, K. F., **31** 30
CHERNOMORSKAYA, I. G., see FELDSHTEIN, M. S., **35** 652
CHERNOVA, Z. D., see BELONOVSKAYA, G. P., **37** 128
CHERNYKH, Z. V. AND V. G. EHSHTEIN, Effects of the types of rubber and carbon black on the formation of carbon-rubber gel, **32** 1185
CHERTKOVA, V. F., see KUZMINSKII, A. S., **32** 562
CHERUBIM, M., see SCHEELE, W., **31** 286; **34** 606
CHESNOKOVA, N. N., see BRESLER, S. E., **33** 689
——, see KOROTKOV, A. S., **33** 610

CHILDERS, C. W. AND G. KRAUS, Properties of random and block copolymers of butadiene and styrene. III. Three sequence styrene butadiene styrene block polymers, **40** 1183
——, see KRAUS, G., **39** 1530
CHINAI, S. N. AND W. C. SCHNEIDER, Shear dependence of viscosity and molecular weight transitions. A study of entanglement effects, **40** 522
CHUBAROVA, G. V., see REZTSOVA, E. V., **38** 657
CHULIUKOVA, T. A., see SHATALOV, V. P., **32** 701
CIFERRI, A. AND P. J. FLORY, Stress-strain isotherm for polymer networks, **33** 254
——, see GREENE, A., **40** 650
——, see SMITH, K. J., JR., **39** 685
CIPRIANI, C., P. V. PAPERO, AND M. S. MOORE, Effect of crosslinking on flatspotting of nylon 6 tire yarn, **40** 947
CLAMROTH, R., see KEMPERMANN, TH., **33** 282
CLARK, S. K., Review of cord-rubber elastic characteristics, **37** 1365
CLAXTON, W. E., Stress-strain equation for rubber in tension, **32** 394
——, F. S. CONANT, AND J. W. LISKA, Evaluation of progressive changes in elastomer properties during vulcanization, **34** 777
——, see CONANT, F. S., **34** 765
CLAYTON, R. E., see VANDERBILT, B. M., **38** 379
CLEMSON, C. S., see BAKER, C. H., **42** 1544
CLUFF, E. F. AND E. K. GLADDING, Relation of structure to properties in polyurethanes. Crosslinking studies, **34** 629
——, E .K. GLADDING, AND J. B. ROGAN, Relation of structure to properties in polyurethanes. Effect of branching, **34** 639
COCKBAIN, E. G., see ALLEN, P. W., **33** 825
——, see ARCHER, B. L., **40** 679
CODDINGTON, D. M., W. D. MARSH, AND H. C. HODGES, New approach to tire durability testing, **38** 741
COLE, H. M., D. L. PETTERSON, V. A. SLJAKA, AND D. S. SMITH, Identification and determination of polymers in compounded cured rubber stocks by pyrolysis and two-channel gas chromatography, **39** 259
COLLETTE, J. W., see GLADDING, E. K., **35** 1114
COLLINS, E. A. AND L. A. CHANDLER, Temperature and rate effects on crystalline transitions in *cis*-1,4 polybutadiene as measured by DTA, **39** 193
COLLINS, J. M., W. L. JACKSON, AND P. S. OUBRIDGE, Relevance of elastic and loss moduli of tire components to tire energy losses, **38** 400
COLLINS, J. O., W. R. GOETHEL, AND J. O. HEI, Determination of di-o-tolylguanidine dicatechol borate in rubber compounds, **33** 237
COLLINS, R. L., M. D. BELL, AND G. KRAUS, Unpaired electrons in carbon blacks, **33** 993
——, see KRAUS, G., **32** 107
CONANT, F. S. AND W. E. CLAXTON, The CEPAR (cure, extrusion, plasticity, and recovery) apparatus—An instrument for measuring processing characteristics of rubber mixes, **34** 765
——, AND J. W. LISKA, Friction studies on rubberlike materials, **33** 1218
——, J. F. SVETLIK, AND A. E. JUVE, Equivalent cures in specimens of various shapes, **31** 562
——, see BOOR, L., **33** 1114
——, see CLAXTON, W. E., **34** 777
COOK, F. R., see VOET, A., **40** 1364
COOK, R. D., see DAVISON, S., **38** 475
COOPER, D. H., Distribution of side force and side slip in the contact area of the pneumatic tire, **32** 490
COOPER, D. G. T., see BAWN, C. E. H., **40** 602
COOPER, W. AND R. K. SMITH, Extraction of admixed polymers from natural rubber vulcanizates, **40** 1553
COOPER, W. T., see RAILSBACK, H. E., **32** 308
COOPER, W., D. E. EAVES, AND G. VAUGHAN, Solution properties of polybutadiene and *trans*-polyisoprene fractions, **36** 488
COOPER, W., D. E. EAVES, M. E. TUNNICLIFFE, AND G. VAUGHAN, Structure of ethylene propylene dicyclopentadiene terpolymers, **39** 964
CORAN, A. Y., Vulcanization. Part III. Rapid methods for characterizing rubber networks, **37** 668
Part IV. The effects of compounding variables on the nature of rubber networks, **37** 673
Part V. The formation of crosslinks in the system: natural rubber-sulfur-MBT-zinc ion, **37** 679
Part VI. A model and treatment for scorch delay kinetics, **37** 689
Part VII. Kinetics of sulfur vulcanization of natural rubber in presence of delayed action accelerators, **38** 1
CORISH, P. J., Analysis of *cis* and *trans* 1,4 contents of polyisoprenes by near infrared spectroscopy, **33** 975
Fundamental studies of rubber blends, **40** 324
——, AND M. E. TUNNICLIFFE, A critical evaluation of infrared methods for determination of the E/P ratio of ethylene propylene rubbers, **39** 226
CORNFORTH, J. W., see ARCHER, B. L., **40** 679
CORRADINI, G., see BRUZZONE, M., **39** 1593
CORRADINI, P., Conformation of stereoregular polydienes in the crystal state, **39** 14
——, see NATTA, G., **33** 703; **33** 732
COTTEN, G. R., Carbon black reinforcement in preswollen rubbers, **39** 1553
——, AND B. B. BOONSTRA, Stress relaxation in rubbers containing reinforcing fillers, **40** 829
COUCH, W. H., G. H. HUNT AND O. S. PRATT, Ozone resistance of rubber insulations, **32** 1104
COUNG, T. C., *see* RIBAILLIER, D., **38** 450
COX, W. L., Chemical antiozonants and factors affecting their utility, **32** 364
——, AND C. R. PARKS, Effect of curing systems on fatigue of natural rubber vulcanizates, **39** 785
CRAFT, T., see ZAPAS, L. J., **40** 506
CRAIG, D., Displacement of elastomers from carbon gel in filled mixes, **40(1)**xliv
——, see SEMON, W. L., **31** 847
——, see WESTFAHL, J. C., **36** 259
CRAMER, H. I., Benjamin S. Garvey, Jr.—22nd Charles Goodyear Medalist, **38(3)**xxix
CRESPI, G. AND A. ARCOZZI, Crosslinking in low unsaturation rubbers, **38** 590
——, see NATTA, G., **36** 988; 1583
CRITCHFIELD, F. E., see MAGNUS, G., **39** 1328
CROCKER, G., see WEIDNER, C. L., **33** 1323; **34** 1190

CROSSLEY, H. G., see ALLEN, G., **40** 1421
CUNNEEN, J. I., *Cis-trans* isomerization in natural polyisoprenes, **33** 445
——, G. M. C. HIGGINS, AND R. A. WILKES, *Cis-trans* isomerization in polyisoprene. Part VII. Double bond movement during isomerization of natural rubber and related olefins, **40** 921
CUNNINGHAM, R. E., Catalyst and solvent effects in terpolymerization of ethylene, propylene, and dicyclopentadiene, **40** 556
CUONG, T.-C., see FOURNIER, P., **34** 1229
CURCHOD, J., see DE MERLIER, J., **37** 457

DABHADE, S., see NATTA, G., **39** 1667
DANJARD, J.-C., see LE BRAS, J., **31** 849
——, see PINAZZI, C., **36** 282
DANNALS, L. E., see HOWLAND, L. H., **32** 706
DANNENBERG, E. M. AND J. J. BRENNAN, Strain energy as a criterion for stress-softening in carbon-black-filled vulcanizates, **39** 597
——, see BOONSTRA, B. B. S. T., **32** 825
——, see BOLT, T. D., **34** 43, 1141
DANNIS, M. L., Thermal expansion measurements and transition temperatures, first and second order, **32** 1005
II. An automatic recording system, **34** 705
Stress-strain testing of rubber at high rates of elongation, **36** 28
DANON, J., see GOLUB, M. A., **39** 992
DARR, W. C., see STEINGISER, S., **37** 38
DAVIS, A. R., see SULLIVAN, F. A. V., **33** 899
DAVIS, D. D., see SLICHTER, W. P., **36** 318; **38** 517
DAVISON, S., M. A. DEISZ, D. J. MEIER, AND R. J. REYNOLDS, Laboratory testing of tread stock abrasion resistance at constant transmitted power. I. Comparison of road and laboratory data at various severities, **38** 457
————, AND R. D. COOK, II. A new laboratory abrasion instrument, **38** 475
DAWKINS, J. V., see KRIGBAUM, W. R., **40** 788
DAWSON, H. G., see STAVELY, F. W., **34** 423
DAY, R. B. AND S. D. GEHMAN, Theory for the meridian section of inflated cord tires, **36** 11
DEAN, W. R., V. PERERA, AND J. GLAZER, Monolayer studies of some hydroxylated polyolefin rubbers, **31** 446
DECKER, G. E., R. W. WISE, AND D. GUERRY, An oscillating disk rheometer for measuring dynamic properties during vulcanization, **36** 451
DEDECKER, H. K. J., see SLIMERS, F. A., **33** 535
——, see VAN AMERONGEN, G. J., **31** 650
DEISZ, M. A., see DAVISON, S., **38** 457, 475
DE KOCK, R. J. AND A. VEERMANS, Structure and content of dicyclopentadiene in ethylene propylene dicyclopentadiene terpolymers, **40** 563
DE MERLIER, J. AND J. LE BRAS, Influence of chemical modification on the oxidizability of natural rubber, **36** 1043
——, J. LEVEQUE, AND J. CURCHOD, The elasticity of rubber-bitumen binders for use in roads, **37** 457
DEMIDIONOVA, V. Y., see BLOKH, G. A., **33** 1015
DEMIDOVA, G. I., see YAKUBCHIK, A. I., **32** 288
DENN, M. M., see METZNER, A. B., **40** 1426
DERMODY, W. J., see MELTZER, T. H., **37** 221, 225
DERYAGIN, B. V., S. K. ZHEREBKOV, AND A. M. MEDVEDEVA, Adhesion phenomena in the bonding of rubber to metal by means of Leikonat bonding agent. 2. Unfilled vulcanized rubber, **33** 757
——, see MEDVEDEVA, A. M., **32** 67
DESANGES, H., R. CHASSET, AND P. THIRION, Changes in the electrical properties of natural rubber carbon black compounds during vulcanization, **31** 631
DESSEWFFY, O., Dependence of bound rubber on concentration of filler and on temperature. I, **35** 599
Dependence of bound rubber on concentration of filler and on temperature. II, **35** 611
——, G. SCHAY, AND P. SZOR, Stress-strain relations in rubber blocks under compression. II., **32** 420
DETENBER, J. D., see MURRAY, R. M., **34** 668
DEVINE, F. E. AND J. A. ROSS, Rheological properties of two unvulcanized rubber compounds as determined on an extrusion and a rotational viscometer, **37** 491
DEVINEY, M. L., JR., see LEWIS, J. E., **40** 1570
DEVIRTS, E. Y. AND A. S. NOVIKOV, Effect of redox systems on thermal oxidative plasticizing of butadiene acrylonitrile rubber, **33** 790
Oxidation of butadiene acrylonitrile rubbers, **35** 700
DE VRIES, A. J., Foam stability: a fundamental investigation of the factors controlling the stability of foams, **31** 1142
DE WITT, B. J., see SELLERS, J. W., **34** 729
D'IANNI, J. D., Newer synthetic rubbers derived from olefins and diolefins, **34** 361
DIBENEDETTO, A. T., see PAUL, D. R., **39** 1496
DIBBO, A., D. G. LLOYD, AND J. PAYNE, Behavior of sulfenamide accelerators under adverse processing conditions, **36** 911
DICKIE, R. A., see FERRY, J. D., **39** 897
DICKINSON, L. A., New elastomers derived from copolymers of tetrahydrofuran and propylene oxide, **36** 296
DIEM, H. E., H. TUCKER, AND C. F. GIBBS, *Cis*-1,4-polyisoprene rubber by alkyllithium initiated polymerization, **34** 191
DIGIULIO, E., G. BALLINI, AND G. V. GIANDINOTO, Elongation at break as a measure of crosslink density in vulcanized elastomers, **39** 726
——, see BALLINI, G., **39** 521
DOAK, K. W., see AUER, E. E., **31** 185
DOBBIN, R. E., see BOLT, T. D., **34** 1141
DOBROMYSLOVA, A. V., see DOGADKIN, B. A., **31** 569; **32** 184; **33** 261, 1068; **35** 501, 509
DOBSON, G. R. AND M. GORDON, Theory of branching processes and statistics of rubber elasticity, **39** 1472

DOGADKIN, B. A., Mechanism of vulcanization and the action of accelerators, **32** 174
Physical chemical factors in bond strength in multiply vulcanized articles, **33** 545
——, O. N. BELYATSKAYA, A. B. DOBROMYSLOVA, AND M. S. FELDSHTEIN, Vulcanization of rubber in the presence of N,N-diethyl-2-benzothiazolylsulfenamide as accelerator, **33** 361
——, AND E. N. BELYAEVA, Role of free radicals in low temperature vulcanization of butadiene rubber, **33** 199
——, AND I. BENISKA, Action of vulcanization activators, **31** 329
——, A. V. DOBROMYSLOVA, AND O. N. BELYATSKAYA, Scorching of rubber mixes. II. Effect of retarders on the kinetics of sulfur combination, **35** 501
————, AND T. A. GYUL'-NAZAROVA, Scorching of rubber mixes. I. Structural changes in unfilled and filled stocks, **35** 509
——, A. DOBROMYSLOVA, L. SAPOZHKOVA, AND I. TUTORSKII, Effect of mercaptobenzothiazole on rubber structure during oxidation, heating and milling, **32** 184
——, A. V. DOBROMYSLOVA, F. S. TOLSTUKHINA, AND N. G. SAMSONOVA, Influence of structure of the chemical activity and vulcanizability of butadiene polymers, **31** 569
——, D. L. FEDYUKIN, AND V. E. GUL, Effect of swelling on the strength of vulcanizates, **31** 756
——, M. S. FELDSHTEIN, AND E. N. BELYAEVA, Action of binary accelerator systems of vulcanization, **33** 373
Reactions of accelerators of vulcanization with rubbers of different structures, **38** 204
——, M. S. FELDSHTEIN, I. I. EITINGTON, AND D. M. PEVZNER, Action of some heterocyclic disulfides as agents and accelerators of vulcanization, **32** 976
——, M. S. FELDSHTEIN, AND D. M. PEVZNER, Composition of vulcanizing system, course of vulcanization and bond strength of plied-up SBR, **33** 384
——, V. E. GUL, AND N. A. MOROZOVA, The effect of electric charges formed during repeated deformations on the fatigue resistance of vulcanizates, **33** 970
—— AND V. N. KULEZNEV, Gel formation in the mastication of natural rubber, and its influence on vulcanizate strength, **33** 940
——, B. LUKIN, Z. TARASOVA, Z. SKORODUMOVA, AND I. TUTORSKII, The theory of rubber reinforcement: interaction of carbon black with sulfur and rubber, **31** 361
—— AND N. N. PAVLOV, Spectroscopy investigations of vulcanization of rubber **36** 262
——, K. PECHKOVSKAYA, AND E. GOLDMAN, Structure and properties of filled stocks XVI. Polybutadiene filled with colloidal silica, **32** 639
——, L. G. SENATORSKAYA, V. I. GUSEVA, A. V. SUSLYAKOV, AND P. I. ZAKHARCHENKO, Filler-rubber interaction in latex, **31** 655
—— AND V. A. SHERSHNEV, The interaction of tetramethylthiuram disulfide with rubber and with compounds containing a labile hydrogen atom, **33** 401
Metal oxides in tetramethylthiuram disulfide vulcanization, **33** 412
The reaction of tetramethylthiuram disulfide and monosulfide with rubber, **33** 398
Vulcanization of rubber in the presence of organic accelerators, **35** 1
————, AND A. V. DOBROMISLOVA, Reversion during TMTD vulcanization, **33** 1068
——, Z. N. TARASOVA, M. I. KAPLUNOV, V. L. KARPOV, AND N. A. KLAUZEN, Structure and properties of rubbers produced in radiation vulcanization, **32** 785
—— AND I. TUTORSKII, Mechanism of accelerator action. Reaction of mercaptobenzothiazole with sulfur, **31** 343
————, AND D. M. PEVZNER, Mechanism of vulcanization in the presence of 2-mercaptobenzothiazole, **31** 751
Mechanism of mill breakdown and vulcanization in the presence of 2-mercaptobenzothiazole, **31** 348
——, see BENISKA, J., **32** 774; **32** 780
——, see BRESLER, S. E., **34** 318
——, see FELDSHTEIN, M., **31** 526; **32** 164, 983; **33** 357
——, see GUL, V. E., **32** 454
——, see KLAUZEN, N. A., **33** 208
——, see PECHKOVSKAYA, K. A., **36** 156
——, see TARASOVA, Z. N., **38** 661, 666; **39** 1625
——, see TUTORSKII, I. A., **34** 334; **36** 1019
DOLGOPLOSK, B. A., E. N. KROPACHEVA, AND K. V. NELSON, *Cis-trans* isomerization of natural rubber under the influence of organo-aluminum compounds and titanium tetrachloride, **32** 1036
——, V. N. REIKH, E. I. TINYAKOVA, A. E. KALAUS, Z. A. KORYUSHENKO, AND E. G. SLADKEVICH, Carboxylic rubbers. II. Properties of cured stocks, **32** 328
——, AND E. I. TINYAKOVA, Redox systems in the initiation of radical processes. Mechanism of action, **32** 244
————, V. N. REIKH, T. G. ZHURAVLEVA, AND G. P. BELONOVSKAYA, Carboxylic rubbers. I. Synthesis and structures, **32** 321
——, see BELONOVSKAYA, G. P., **37** 128
——, see BRESLER, L. S., **37** 121
——, see BRESLER, S. E., **31** 278
——, see BOLDYREVA, I. I., **33** 985
——, see ERMAKOVA, I. I., **35** 618
——, see FO-SHUNG, W., **33** 971
——, see TINYAKOVA, E. I., **31** 353; **32** 220, 231
DOLLINGER, R. E. AND R. H. KALLENBERGER, Effect of carbon black densification on structure measurements, **40** 1311
DONNELLY, P. I., A rugged semiautomatic extensometer for rubber, **36** 68
DONNET, J.-B., C. ECKHARDT, P. HORN, S. PREMILAT, AND A. VOET, Light scattering study of carbon black structure, **40** 919
DORFMAN, E., W. E. EMERSON, R. L. K. CARR, AND C. T. BEAN, A synthesis of poly(2,4-perfluoroalkylene-6-perfluoroalkyltriazine)s, **39** 1175
DORKO, Z. J., D. C. EDWARDS, AND P. B. LUMB, Faster curing butyl rubber, **35** 705
DOROKHINA, A. S., see NOVIKOV, A. S., **31** 27
DOSTYAN, M. S., see UZINA, R. V., **32** 870
DRUGOVA, G. P., see SLONIMSKII, G. L., **33** 953
DRUSHEL, H. V., see HALLUM, J. V., **31** 941
DUCKWORTH, I. H., Creamed latex concentrate, **38** 233

DUDEK, T. J. AND F. BUECHE, Tensile strength of gum and reinforced EPR and SBR vulcanizates, **37** 818
Polymer-solvent interaction parameter and creep of ethylene-propylene rubber, **37** 894
——, see BUECHE, F., **36** 1
DUDLEY, M. A., AND D. A. SMITH, Influence of environmental variables on characterization of polymer decomposition by thermogravimetry, **40** 445
DUNLEAVY, R. A., see MAGNUS, G., **39** 1328
DUNN, J. R., Oxidative aging in ultraviolet light of dicumyl peroxide vulcanizates of natural rubber in presence of various antioxidants, **34** 686
Oxidative stress relaxation studies of radiation cured vulcanizates, with and without antioxidant, **34** 910
Effect of extraction and rubber purity on stress relaxation of cumyl peroxide vulcanizates, **38** 370
——, AND S. G. FOGG, Protection of transparent vulcanizates against aging in sunlight, **34** 919
——, AND J. SCANLAN, Aging of natural rubber vulcanizates in the presence of dithiocarbamates, **32** 739
————, AND W. F. WATSON, Stress relaxation during the thermal oxidation of vulcanized natural rubber, **33** 423
Stress relaxation during the photoxidation of peroxide crosslinked rubber, **33** 433
DUNNING, D. J. AND P. J. PENNELLS, Effect of strain on rate of crystallization of natural rubber, **40** 1381
DYCKES, G. W., see SEELEY, R. D., **38** 924

EAGLES, A. E. AND A. R. PAYNE, A simple extensometer for tensile testing of polymers, **31** 673
EAVES, D. E., see COOPER, W., **36** 488; **39** 964
ECCHER, S., Typical damage in mallory tubes and tire carcasses, **40** 1014
——, see ANGIOLETTI, A., **38** 1115
ECHTE, E., W. SCHEELE, AND S. SONNENBERG, Vulcanization of elastomers. 28. Vulcanization of natural and synthetic rubbers with sulfur in the absence of accelerators. I. **33** 1051
——, see LORENZ, O., **31** 117, 548
ECKERT, F. J., see SCOTT, C. E., **39** 553
ECKER, R., Abrasion resistance and high speed tensile strength of elastomers, **39** 823
ECKHARDT, C., see DONNET, J.-B., **40** 919
EDELMANN, K. AND E. HORN, Rheological measurements for the characterization of high polymers, **31** 681
Significance of rheology in rubber processing. 2. Studies of latex, **32** 1050
——, AND G. KOLBE, The importance of rheology in the processing of rubber. 1. Rheological investigations of rubber solutions, **32** 1039
EDWARDS, D. C., Aging behavior of butyl vulcanizates, **39** 581
——, see BRIGGS, G. J., **36** 621; **37** 134
——, see DORKO, Z. J., **35** 705
EHRENBURG, E. G., see PODDUBNYI, I. YA, **31** 699
EIERMANN, K., Model interpretation of thermal conductivity in high polymers I. Amorphous high polymers, **39** 841
II. Stretched amorphous high polymers, **39** 858
Determination of the temperature dependence of crystallization from thermal conductivity, **39** 866
Pressure dependence of thermal conductivity in amorphous materials, **39** 863
—— AND K.-H. HELLWEGE, Thermal conductivity of high polymers from —180° to 90°C, **36** 75
EITINGON, I. I., M. S. FELDSHTEIN, AND D. M. PEVZNER, Accelerator action of certain heterocyclic N-thiocarbamylsulfendialkylamides, **35** 644
——, see DOGADKIN, B. A., **32** 976
——, see FEL'DSHTEIN, M. S., **32** 983; **33** 357; **35** 652
——, see TARASOVA, Z. N., **38** 661, 666
ELLIOTT, D. J., see BELL, C. L. M., **39** 1565
ELLIS, B. AND G. N. WELDING, Estimation, from swelling, of the structural contribution of chemical reactions to the vulcanization of natural rubber. Part I. General method, **37** 563
Part II. Estimation of equilibrium degree of swelling, **37** 571
EMERSON, W. E., see DORFMAN, E., **39** 1175
ENGLAND, W. D., J. A. KRIMIAN, AND R. H. HEINRICH, Weather aging of elastomers on military vehicles, **32** 1143
EPSHTEIN, V. G., Carbon black structure and the tear resistance of vulcanizates, **32** 1180
——, see CHERNYKH, Z. V., **32** 1185
ERBEN, G., see KLEEMAN, W., **37** 204
ERENBURG, E. G., see PODDUBNYI, I. Y., **34** 975; **36** 807
ERICKSON, E. R., R. A. BERNTSEN, E. L. HILL, AND P. KUSY, Reaction of ozone with SBR rubbers, **32** 1062
ERMAKOVA, I. I., B. A. DOLGOPLOSK, AND E. N. KROPACHEVA, *Cis-trans* isomerization of 1,4-polybutadiene under the influence of nitrogen dioxide, **35** 618
ERMOLINA, A. V., see IGONIN, L. A., **34** 953
ERUSALIMSKII, B. L., I. G. KRASNOSELSKAYA, AND V. V. MAZUREK, Polymerization of chloroprene in the presence of organometallic compounds: The system chloroprene-butyllithium, **38** 991
——, see FO-SHUNG, W., **33** 971
ESSER, H., Vulcanizates from natural rubber and *bis*-azo compounds. Aging properties, **32** 544
Improvement of asphalt by addition of rubber and latex, **37** 1049
EVANS, I., Rolling resistance of a wheel with a solid rubber tire, **33** 302
EYKAMP, G. R., see BARTHOLOMEW, E. R., **32** 1587

FAINA, S., see SARTORI, G., **38** 620
FALB, R. D., G. A. GRODE, AND R. I. LEININGER, Elastomers in the human body, **39** 1288
——, see STICKNEY, P. B., **37** 1299
FAWCETT, M. S., see VERBANC, J. J., **35** 1126
FEDOROVA, G. B., see YAKUBCHIK, A. I., **32** 288
FEDOROVA, T. V., see TARASOVA, Z. N., **38** 661, 666
FEDORS, R. F. AND R. F. LANDEL, Statistical variablity of ultimate properties of SBR gum vulcanizates, **39** 712
——, see LANDEL, R. F., **40** 1049

FEDYUKIN, D. L., see DOGADKIN, B. A., **31** 756
——, see GUL, V. E., **32** 454
FELDSHTEIN, M. S., I. G. CHERNOMORSKAYA, E. N., GURYANOVA, AND I. I. EITINGON, Accelerator activity of 2-benzothiazole sulfenamide derivatives and the exchange of benzthiazyl thiyl radicals with radioactive 2-benzothiazyl disulfide, **35** 652
——, I. I. EITINGON, D. M. PEVZNER, N. P. STREL'NIKOVA, AND B. A. DOGADKIN, Derivatives of 2-mercaptobenzothiazole and dimethyldithiocarbamic acid as vulcanization accelerators, **32** 983
——, I. I. EITINGON, AND B. A. DOGADKIN, Derivatives of 2-mercaptobenzothiazole as accelerators, **33** 357
——, P. ORLOVSKY, AND B. DOGADKIN, The role of metal oxides as activators of vulcanization, **31** 526
Metal oxides as vulcanization activators for sodium butadiene rubber, **32** 164
——, see DOGADKIN, B. A., **32** 976; **33** 361, 373, 384; **38** 204
——, see EITINGON, I. I., **35** 644
——, see KUZMINSKII, A. S., **35** 147
FELICE, U., see ANGIOLETTI, A., **31** 211
FERGUSON, R. C., Infrared and nuclear magnetic resonance studies of microstructures of polychloroprenes, **38** 532
Elucidation of polymer microstructure by high resolution NMR spectroscopy, **40** 385
FERRIS, S. W., S. S. KURTZ, JR., AND J. S. SWEELY, Prevention of ozone attack on rubber by use of waxes, **32** 379
FERRY, J. D., R. G. MANCKE, E. MAEKAWA, Y. OYANAGI, AND R. A. DICKIE, Dynamic mechanical properties of crosslinked rubbers. I. Effects of crosslink spacing in natural rubber, **39** 897
——, see E. MAEKAWA, **39** 905
FETTES, E. M., see ANGIER, D. J., **38** 1164
FIORENZA, A. AND G. BONOMI, Identification of elastomers by infrared spectrophotometry, **36** 1129
Identification of elastomers by gas chromatography applied to pyrolyzates, **37** 741
————, AND R. PIACENTINI, Spectrophotometry and chromatography for identification of antioxidants and accelerators in rubber mixtures, **36** 1119
FISCHER, E. AND J. F. HENDERSON, Effect of temperature on stress-optical properties of styrene butadiene block copolymers, **40** 1373
FISHER, B. S., see GLADDING, E. K., **35** 1114
FITZGERALD, E. R., Dynamic mechanical properties of stretched natural rubber, **35** 388
FLETCHER, W. P. AND S. G. FOGG, Heat aging of natural rubber vulcanized with tetramethylthiuram disulfide, **31** 327
FLOM, D. G., see BUECHE, A. M., **33** 105
FLORY, P. J., see CIFERRI, A., **33** 254
——, see OTH, J. F. M., **31** 485
FLYNN, J. H., see WALL, L., **35** 1157
FODEN, R. M., see BAKER, H. C., **33** 810
FOGEL, V. O., see GENGRINOVICH, V. I., **32** 444
FOGG, S. G., see FLETCHER, W. P., **31** 327
——, see DUNN, J. R., **34** 919
FOLKMAN, J., D. M. LONG, JR., AND R. ROSENBAUM, Silicone rubber: A new diffusion property useful for general anesthesia, **40** 928
FORMAN, L. E., see STEARNS, R. S., **33** 595
FOMENKO, B. A., V. P. VOLODIN, A. V. SIDOROVICH, AND E. V. KUVSHINSKII, Thermomechanical study of polyisobutylene by stretching and indentation, **37** 365
FOMICHEVA, M. M., see KUVSHINSKII, E. V., **32** 651
FOMINA, L. P., see KLEBANSKII, A. L., **32** 588; **33** 1062
——, see TUTORSKII, I. A., **36** 1019
FORBES, W. G. AND L. A. MCLEOD, Dependence of tack strength on molecular properties, **32** 48
FORD, F. P., see HESS, W. M., **36** 1175
FORSTER, M. J., see STAVELY, F. W., **34** 423
FO-SHUNG, W., B. A. DOLGOPLOSK, AND B. L. ERUSALIMSKII, Polymerization of isoprene by organomagnesium compounds, **33** 971
FOURNIER, P. AND T-C CUONG, Biosynthesis of rubber, **34** 1229
——, see RIBAILLIER, D., **38** 450
FOWLER, R. B., see SEMON, W. L., **31** 847
FOXLEY, G. H., Degradation of rubber by chemical agents in solution **34** 1212
FRAGA, D. W., Absence of 3,4 structure in natural polyisoprenes, **33** 982
FRANCK, A., K. HAFNER, AND W. F. KERN, Activation energy of vulcanization, **35** 76
——, see SCHEELE, W. **32** 139
FRANK, F. AND W. HOFFERBERTH, Mechanics of the pneumatic tire, **40** 271
FREDERICK, J. E., see SMITH, T. L., **40** 694
FRENKEL, S. YA., see BRESLER, S. E., **31** 278
FRIES, B. A., see BLY, R. M., **39** 956
FROMANDI, G. AND S. REISSINGER, Hot mixing of rubber. I. Influence of mixing conditions on scorching and on the physical properties of the vulcanizates, **32** 295
FRULLA, F. F., see SCHROEDER, H., **39** 1184
FUJITA, H., see ABE, M., **39** 609
——, see HOMMA, T., **39** 622
FUKUDA, H. AND J. TSURUGI, Chemistry of vulcanization. VIII. Role of zinc butyrate in the reaction of diphenylmethane, sulfur, and 2-benzothiazolyl disulfide, **34** 648
IX. Accelerating mechanism of 2-aminothiobenzothiazole, **35** 484
Chemistry of vulcanization. X. Accelerating mechanism of sulfenamide type accelerators, **35** 491
——, see TSURUGI, J., **31** 800; **33** 211, 217
FUKUMOTO, T., see JITSUO, T., Radiation induced *cis* and *trans* isomerization of polyisoprenes and temperature dependence of the equilibria, **40** 1222
FUQUA, S. A., see GOLUB, M. A., High resolution nuclear magnetic resonance spectra of various polyisoprenes, **36** 315
FURUKAWA, J., Kinetic interpretation of rheological behavior of high polymers, **35** 1013
——, see SATO, Y., **35** 857; **36** 1081

Gallot, B., R. Mayer, and C. Sadron, Organized amorphous copolymers. Polystyrene and polyisoprene system, **40** 932
Gamble, L. W., L. Westerman, and E. A. Knipp, Molecular weight distributions of elastomers—comparison of gel permeation chromatography with other techniques, **38** 823
Garner, H. K., see Kelly, R. J., **35** 1101
Garvey, B. S., Jr., Rubber chemistry: A great adventure, **38**(3)xi
Gatovskaya, T. V., see Pavlyuchenko, G. M., **36** 1003
Gavrishchuk, V. Y. and P. I. Zubov, Mechanism of optimum vulcanization in some synthetic rubbers, **35** 517
W. C. Geddes, Mechanism of PVC degradation, **40** 177
Gee, G., J. B. M. Herbert, and R. C. Roberts, Vapor pressure of a swollen crosslinked elastomer, **40** 1159
——, see C. Booth, **38** 314, 325
Geesink, H. A. O. W. and Cl. P. Prat, Wear of passenger car tires, **31** 166
Gehman, S. D., Theory of random filler dispersions in rubber, **35** 819
Heat transfer in processing and use of rubber, **40** 36
Molecular weight distribution of network chains and swelling pressure of vulcanizates, **40** 532
——, and T. C. Gregson, Ionizing radiation and elastomers, **33** 1375
——, F. S. Maxey, and S. R. Ogilby, Vulcameter determination of best cure, **38** 757
——, Reilly, P. J., and Larsen, G. M., Rapid treadwear ratings with radioactive isotopes, **40** 969
——, P. Rohall, and D. I. Livingston, Biaxial fatigue testing of vulcanizates, **34** 506
——, see Day, R. B., **36** 11
Gelinas, L. P., I. W. E. Harris, and E. B. Storey, Estimation of wear resistance of tread vulcanizates, **35** 354
—— and E. B. Storey, A towing device for estimating road wear, **35** 339
Gengrinovich, V. I. and V. O. Fogel, Thermophysical characteristics of cured rubber stocks, **32** 444
Gengrinovich, B. I. and G. L. Slonimskii, The plastic flow and elasticity of raw rubber and raw rubber mixes, **32** 673
Gent, A. N., Load-deflection relations and surface strain distributions for flat rubber pads, **31** 395
Crystallization in natural rubber. V. Chemically modified rubber, **31** 519
On the relation between indentation hardness and Young's modulus, **31** 896
Simple rotary dynamic testing machine, **34** 790
Relaxation processes in vulcanized rubber. I. Relations between stress relaxation, creep, recovery, and hysteresis, **36** 377
II. Secondary relaxation due to network breakdown, **36** 389
Some chemical effects in fatigue cracking of vulcanized rubbers, **36** 399
Mechanics of foamed elastic materials, **36** 597
Relaxation processes in vulcanized rubber. III. Relaxation at large strains and the effect of fillers, **36** 697
Elastic stability of rubber compression springs, **38** 415
Crystallization in stretched polymer networks. II. *trans*-Polyisoprene, **40** 1394
——, and P. B. Lindley, Tension flaws in bonded cylinders of soft rubber, **31** 393
Internal rupture of bonded rubber cylinders in tension, **34** 925
————, and A. G. Thomas, Cut growth and fatigue of rubbers. I. The relationship between cut growth and fatigue, **38** 292
——, and J. E. McGrath, Effects of temperature on ozone cracking of rubbers, **39** 643
——, and K. C. Rusch, Viscoelastic behavior of open cell foams, **39** 389
——, see Braden, M., **33** 1142, 1156; **35** 200
Gerber, A., see Kuntz, I., **3**[illegible] 628
Gerke, R. H., Vulcanizing efficiency during the scorch period, **36** 1153
German, R., G. Vaughan, and R. Hank, Ethylene propylene terpolymers, **40** 569
Gessler, A. M., Attrited carbon blacks and their behavior in elastomers. III. Effects in SBR and other rubbers, **34** 16
Reinforcement of butyl with carbon black. I. Effect of oxidized blacks on stress-strain properties and bound rubber, **37** 1013
II. Thermally vs. chemically oxidized blacks, **37** 1034
Gesner, B. D., Graft copolymerization: On the structure of the graft phase and the mechanism of grafting polybutadiene rubber, **38** 655
Gessner, T., Reaction of tetraethylthiuramdisulfide with alkali and its bearing on vulcanization, **35** 659
Gevantman, L. H., see Shelberg, W. E., **34** 250
Giandinoto, G. V., see di Giulio, E., **39** 726
Gibbs, C. F., see Diem, H. E., **34** 191
Gibbs, W. E., see Pierson, R. M., **31** 213
——, see Bartholomew, E. R., **32** 1587
Giles, C. G. and B. E. Sabey, The role of rubber hysteresis in skidding resistance measurements, **33** 151
————, and K. H. F. Cardew, Development and performance of the portable skid resistance tester, **38** 840
Gillespie, T., Application of the hydrodynamic structural theory of non-Newtonian flow to suspensions which exhibit moderate shear thickening with particular reference to "dilatant" vinyl plastisols, **40** 1270
Analysis of flow of shear thinning colloidal and polymeric systems which exhibit elastic recovery or rigidity, **40** 1505
Ginsburg, L. B., see Tutorskii, I. A., **34** 334
Gippin, M., Polymerization of butadiene with alkylaluminum and cobalt chloride, **35** 1066
Stereoregular polymerization of butadiene with alkylaluminum chlorides and cobalt octoate, **39** 508
Gladding, E. K., B. S. Fisher, and J. W. Collette, A new hydrocarbon elastomer. I. Copolymerization of olefins and nonconjugated dienes, **35** 1114
——, see Cluff, E. F. **34** 629, 639
Glazebrook, R. W., see Bateman, L., **31** 1055, 1065; **35** 633
Glazer, J., see Dean, W. R., **31** 446
Glikman, S. A. and E. P. Korchagina, Coagulation mechanism of butadiene-styrene latex, **32** 531
Goethel, W. R., see Collins, J. O., **33** 237

31 = 1958, **32** = 1959, **33** = 1960, **34** = 1961, **35** = 1962

GOGOS, C. M., see WIENER, F. M., **34** 158
GOLDBERG, E. J., see VERBANC, J. J., **35** 1126
GOLDBERG, E. P., Elastomeric polycarbonate block copolymers, **38** 431
GOLDMAN, E., see DOGADKIN, B., **32** 639
GOLUB, M. A., *Cis* to *trans* isomerization of polyisoprene, **32** 718
——, AND J. DANON, Radiation-induced changes in unsaturation of polyisoprene, **39** 992
——, S. A. FUQUA, AND N. S. BHACCA, High resolution nuclear magnetic resonance spectra of various polyisoprenes, **36** 315
—— AND J. HELLER, Tetracyclosqualene and its bearing on the structure of cyclized rubber, **37** 486
——, see SHIPMAN, J. J., **36** 219
GOLUBENKOVA, L. M., see KOVARSKAYA, B. M., **33** 964
GOOD, W. D., J. L. LACINA, AND J. P. MCCULLOUGH, Tetramethylthiuram monosulfide and tetramethylthiuram disulfide: heats of formation and the S-S thermochemical bond energy, **35** 661
GORBATKINA, Y. A., see BARTENEV, G. M., **34** 1193
GORDON, M., see DOBSON, G. R., **39** 1472
GOTOH, R., T. TAKENAKA, AND N. HAYAMA, Simultaneous measurements of stress and infrared dichroism on polymers. I. Stress relaxation of vulcanized natural rubber, **40** 663
GOUGH, V. E., Friction of rubber, **33** 158
Non-linearity in dynamic tests. I. Vibration test methods, **34** 527
II. Impact and rolling wheel tests, **34** 555
GRAESSLEY, W. W., Molecular entanglement theory of flow behavior in amorphous polymers, **39** 1460
GRAHAM, E. S., see ANGOVE, S. N., **39** 755
GRASEMANN, H., see SCHEELE, W., **31** 315; **32** 150
GREEN, J., N. B. LEVINE, AND W. SHEEHAN, Elastomers resistant to rocket propellants, **39** 1222
GREENBERG, H., see HANSLEY, V. L., **38** 103
GREENE, A., K. J. SMITH, JR., AND A. CIFERRI, Elastic properties of networks formed from oriented chain molecules. II. Composite network, **40** 650
——, see SMITH, K. J., JR., **39** 685
GREENSMITH, H. W., Rupture of rubber. VIII. Comparisons of tear and tensile rupture measurements, **34** 85
——, see SCHALLAMACH, A., **39** 328
GREENWOOD, J. A. AND D. TABOR, The friction of hard sliders on lubricated rubber: The importance of deformation losses, **33** 129
GREGG, R. A., see LITTLE, J. R., **39** 1089
GREGSON, T. C., see GEHMAN, S. D., **33** 1375
GRIFFIN, W. R., Triazine elastomers, **39** 1178
GRIFFIS, C. B. AND M. C. HENRY, Nitroso rubbers, **39** 481
GRILIKHES, S. Y., see YAKUBCHIK, A. I., **35** 1060
GRINTER, H. W., see NEWTON, E. B., **34** 1
GRODE, G. A. see FALB, R. D., **39** 1288
GROHN, H. AND K. BISCHOF, The mechanochemical breakdown of polystyrene by vibromilling, **34** 474
GROMOVA, G. N., see YAKUBCHIK, A. I., **31** 156, 588
GROMOVA, L. S., see UZINA, R. V., **32** 898
GROSCH, K. A., The relation between the friction and viscoelastic properties of rubber, **37** 386
——, J. A. C. HARWOOD, AND A. R. PAYNE, Breaking energy of rubbers, **40** 815
——, AND A. SCHALLAMACH, Tire wear at controlled slip, **35** 1342
Relation between abrasion and strength of rubber, **39** 287
—— AND P. MCL. SWIFT, Oil extended natural rubber for tire treads, **39** 1656
GROTEN, B., Application of pyrolysis and gas chromatography to polymer characterization, **39** 248
GRUVER, J. T. AND G. KRAUS, Rheological properties of polybutadienes prepared by n-butyllithium initiation, **38** 881
——, AND K. W. ROLLMANN, Antioxidant properties of carbon black in unsaturated elastomers. Studies with *cis*-polybutadiene, **38** 636
——, see KRAUS, G., **38** 893, 907; **40** 734
GUAN-I, S., see BRESSLER, S. E., **34** 986
GUBANOV, E. F., see TEITELBAUM, B. Y., **37** 99
GUERRY, D., see DECKER, G. E., **36** 451
GUL, V. E., Mechanism of rupture of high polymers, **34** 101
——, AND V. A. BERESTNEV, Intermolecular interaction in rubber solutions, **32** 668
——, FEDYUKIN, D. L., AND B. A. DOGADKIN, Influence of intermolecular action on the dynamic fatigue of rubbers, **32** 454, 471
—— AND S. A. VILNITS, The influence of temperature on the kinetics of cut growth in vulcanizates, **32** 692
——, see DOGADKIN, B. A., **31** 756; **33** 970
——, see RATNER, S. B., **32** 471
——, see VAKULA, V. L., **34** 562
GURGIOLO, A. E., see HENDRICKSON, J. G., **37** 1
GURNEY, W. A., see CHEETHAM, I. C., **34** 1220
GURYANOVA, E. N., see FELDSHTEIN, M. S., **35** 652
——, see KUZINA, L. S., **34** 600
GUSEVA, V. I., see DOGADKIN, B. A., **31** 655
GUTOWSKY, H. S., see KUSUMOTO, H., **37** 268
GYUL-NAZAROVA, T. A., see DOGADKIN, B. A., **35** 509

HAAGEN-SMIT, A. J., M. F. BRUNELLE, AND J. W. HAAGEN-SMIT, Ozone cracking in the Los Angeles area, **32** 1134
HAAGEN-SMIT, J. W., see HAAGEN-SMIT, A. J., **32** 1134
HAFNER, K., see FRANCK, A., **35** 76
HALL, G. L., J. D. RIGBY, AND J. W. LISKA, Liquid metal bath stress strain apparatus, **38** 782
HALPIN, J. C., Fracture of amorphous polymeric solids: Time to break **38** 263
Molecular view of fracture in amorphous solids, **38** 1007
——, AND F. BUECHE, Fracture of amorphous polymeric solids: Reinforcement, **38** 278
——, see BUECHE, F., **37** 808

HALLUM, J. V. AND H. V. DRUSHEL, The organic nature of carbon black surfaces, **31** 941
HAMMETT, R. E., R. E. WINGARD, AND J. E. LAND, Growth rate of natural rubber crystallites, **39** 206
HANDLER, F., see KAINRADL, P., **33** 1438
HANK, R., Determination of double bonds in ethylene propylene terpolymer rubbers, **40** 936
——, see GERMAN, R., **40** 569
HANOK, M., see BOOR, L., **33** 1114
HANSEN, E. B., see HUNTER, B. A., **33** 510
HANSEN, R. H., see HAWKINS, W. L., **32** 1164
HANSLEY, V. L. AND H. GREENBERG, Control of alfin rubber molecular weight, **38** 103
HARDING, S. W., see BUECHE, F., **32** 97, 99
HARLING, D. F., see HECKMAN, F. A., **39** 1
HARRIS, J. O., see KILBOURNE, H. W., **32** 1155
HARWOOD, J. A. C., L. MULLINS, AND A. R. PAYNE, Stress softening in natural rubber vulcanizates Part II. Stress softening effects in pure gum and filler loaded rubbers, **39** 814
——, AND A. R. PAYNE, III. Carbon black vulcanizates, **39** 1544
IV. Unfilled vulcanizates, **40** 840
——, see GROSCH, K., **40** 815
HARWOOD, J. H., Sequence distribution in copolymers. Chemical studies, **40** 411
Physical property studies, **40** 427
HAVENHILL, R. S. AND L. E. CARLSON, Pigment contact potentials and reinforcement, **36** 176
HAWARD, R. N. AND J. MANN, Reinforced thermoplastics, **38** 1180
HAWARD, R. N., B. WRIGHT, G. R. WILLIAMSON, AND G. THACKRAY, Effect of blending on molecular weight distribution of polymers, **38** 539
HAWKINS, W. L., R. H. HANSEN, W. MATREYEK, AND F. H. WINSLOW, The effect of carbon black on thermal antioxidants for polyethylene, **32** 1164
——, V. L. LANZA, B. B. LOEFFLER, W. MATREYEK, AND F. H. WINSLOW, New thermal antioxidants for polyethylene containing carbon black, **32** 1171
HAXO, H. E., Publication *vs.* presentation, **39**(4)cxxx; **40**(1)iv; (3)xi
——, see KELLY, R. J., **35** 1101
HAYAMA, N., see GOTOH, R., **40** 663
HAYES, R. A., The relationship between glass temperature, molar cohesion, and polymer structure, **35** 558
HEAP, R. D., Distribution of tensile strength data, **39** 340
HECKMAN, F. A., Microstructure of carbon black, **37** 1245
—— AND D. F. HARLING, Progressive oxidation of selected particles of carbon black: further evidence for a new microstructural model, **39** 1
HEFFEL, J., see CARMICHAEL, J., **40** 769
HEI, J. O., see COLLINS, J. O., **33** 237
HEIDEMANN, W., see PETER, J., **31** 105
HEILIGMANN, R. G., see SLIEMERS, F. A., **33** 535
HEIN, R. W., see KOVACIC, P., **35** 520, 528
HEINRICH, R. H., see ENGLAND, W. D., **32** 1143
HEINZE, H. D., K. SCHMIEDER, G. SCHNELL, AND K. A. WOLF, Temperature shift of the second order transition of natural rubber by crosslinking, **35** 776
HELBERG, J., see SCHEELE, W., **38** 189
HELLER, J., see GOLUB, M. A., **37** 486
HELLER, W., Application of dn/dc data for determination of partial specific volumes of dissolved macromolecules, **40** 1281
HELLWEGE, K.-H., see EIERMANN, K., **36** 75
HELMER, J. D., see POLMANTEER, K. E., **38** 123
HELMER, J. D., see THORNE, J. A., **39** 1403
HENDERSON, J. F., J. M. HULME, R. M. B. SMALL, AND H. L. WILLIAMS, Determination of molecular weight distributions of elastomers with the ultracentrifuge, **38** 817
HENDERSON, J. F., see FISCHER, E., **40** 1373
HENDRICKSON, J. G., A. E. GURGIOLO, AND W. E. PRESCOTT, Poly(alklyene oxide) rubbers, **37** 1
HENNIG, J., Anisotropy of thermal conductivity in stretched elastomers, **39** 678
HENRY, M. C., see GRIFFIS, C. B., **39** 481
HERBERT, J. B. M., see GEE, G., **40** 1159
HERMANS, J. J., see VOORN, M. J., **32** 696
HERTE, P., Oxidative softening of synthetic rubber latex, **31** 262
HESS, W. M., Analysis of pigment dispersion in rubber by means of light microscopy, microradiography, and electron microscopy, **35** 228
——, C. E. SCOTT, AND J. E. CALLAN, Carbon black distribution in elastomer blends, **40** 371
——, AND K. A. BURGESS, Reagglomeration as a cause of tread groove cracking, **36** 754
——, AND F. P. FORD, Microscopy of pigment-elastomer systems, **36** 1175
HEWITT, F. G. AND R. L. ANTHONY, Measurement of the isothermal volume dilation accompanying the unilateral extension of rubber, **32** 428
HEYING, T. L., see SCHROEDER, H., **39** 1184
HIGASHIMURA, T., see O'DRISCOLL, K. F., **40** 883
HIGGINS, G. M. C., see CUNNEEN, J. I. **40** 921
HILDENBRAND, L. E., see LIVINGSTON, D. I., **37** 14
HILDITCH, G., see ANGOVE, S. N., **39** 755
HILL, E. L., see ERICKSON, E. R., **32** 1062
HILLMER, K.-H. AND W. SCHEELE, Degradation of elastomers. 2. Oxidative degradation of natural rubber vulcanizates at different elongations and temperatures. II, **32** 759
——, see SCHEELE, W., **33** 335; **36** 236; **37** 698, **39** 1640
HILTON, C. L., Colorimetric determination of amine antioxidants, **32** 844
HIVELY, R. A. AND C. W. WADELIN, Determination of free sulfur in accelerators, **32** 123
HODGES, H. C., see CODDINGTON, D. M., **38** 741
HOFFERBERTH, W., see FRANK, F., **40** 271
HOFFMAN, W., Nitrile rubber (Review), **37** (2-2)
HOFFMANN, M. AND M. UNBEHEND, Vulcanizate structure, relaxation, and tensile strength of polyisoprenes, **36** 815
HOFTYZER, P. J., see VAN KREVELEN, D. W., **40** 806

HOGE, H. J., see CARWILE, L. C. K., **39** 126
HOLDEN, G., see BOOTH, C., **38** 314
HOLLINGSHEAD, W. S., see SPACHT, R. B., **37** 210; **38** 134
HOLLY, E. D., Interaction parameters and heats of dilution for ethylene propylene rubber in various solvents, **39** 1451
HOMMA, T. AND H. FUJITA, Sedimentation analysis of styrene butadiene copolymer rubber, **39** 622
——, see YASUDA, G., **40** 1470
HOPKINS, I. L. AND R. P. WENTZ, Reduced variables and integral equations in design of plastics and rubber structures, **39** 1065
HOPPER, J. R., Effect of oil and black on SBR rheological properties, **40** 463
HORI, T., see IWAKURA, Y., **33** 416
HORN, E., see EDELMANN, K., **31** 681; **32** 1050
HORN, P., see DONNET, JEAN-BAPTISTE, **40** 919
HOWARD, W. H. AND M. L. WILLIAMS, Viscoelasticity and flatspotting, **40** 1139
HOWLAND, L. H. AND R. W. BROWN, Recent developments in synthetic rubber latex, **34** 1501
——, A. NISONOFF, L. E. DANNALS, AND V. S. CHAMBERS, Crosslink density in polybutadiene, **32** 706
HSIEH, H. L., Microstructures of polydienes prepared from alkyllithium, **38** 863
Solution polymerization initiated with alkyllithiums, **39** 491
HUBBARD, G. D., see BULGIN, D., **32** 915
HUFF, K., see MULLER, F. H., **32** 1027
HUGHES, B. G., D. A. W. IZOD, R. C. W. MOAKES, A. L. SODEN, AND W. F. WATSON, Fluid bed vulcanization, **36** 875
HUKE, D. W. AND C. E. KENDALL, Ultraviolet absorption spectroscopy in the study of vulcanization, **37** 709
HULME, J. M. AND L. A. MCLEOD, An elution chromatography technique for *cis*-1,4-polybutadiene, **36** 502
——, see HENDERSON, J. F., **38** 817
HULOT, H. AND P. LEBEL, Analysis of elastomers by gas chromatography, **37** 297
HUMMEL, D., Infrared spectroscopic identification of rubber before and after cure to the soft and hard rubber states, **32** 854
HUMMEL, K., Vulcanization of elastomers. 45. Experiments to determine the Huggins interaction parameter, **37** 446
——, AND G. KAISER, Vulcanization of elastomers. 44. Vulcanization of polybutadiene with cumyl peroxide. I., **38** 581
——, see SCHEELE, W., **32** 566
HUNT, G. H., see COUCH, W. H., **32** 1004
HUNTER, B. A. AND M. J. KLEINFELD, Low temperature expansion of polysulfide rubbers, **39** 211
HUNTER, B. A., A. C. NAWAKOWSKI, R. R. BARNHART, E. M. CAMPBELL, AND E. B. HANSEN, Important stability factors for styrene butadiene rubber, **33** 510
HWA, C. S., see BANKS, S. A., **38** 158

IBE, H., see OHAMA, Y., **37** 758
IGONIN, L. A., A. V. ERMOLINA, Y. V. OVCHINNIKOVA, AND V. A. KARGIN, Molecular ordering in polymers precipitated from solution, **34** 953
——, Y. V. OVCHINNIKOV, AND S. A. ARZHAKOV, Effect of high pressure on self adhesion (autohesion) of high polymers, **32** 527
INGHAM, J. D. AND N. S. RAPP, Mechanism of thermal degradation of certain polyether polyurethanes, **40** 1212
Itatani, H., see TSURUGI, J., **40** 1222
ITO, Y., Nonnewtonian flow of poly(dimethyl siloxane), **42** 1483
IVEY, D. G., see STEVENS, J. R., **32** 434
IWAKURA, Y., T. HORI, K. SIZUKI, T. WAKASUGI, AND G. KOBAYASHI, Synthesis of polysulfides containing polar linkages, **33** 416
IYENGAR, Y., Relation of water vapor permeability of elastomers to molecular structure, **39** 751
IZOD, D. A. W., see HUGHES, B. G., **36** 875

JACKSON, W. J., JR., see PERRY, K. P., **39** 1008
JACKSON, W. L., see COLLINS, J. M., **38** 400
JAMES, D. I., Measurement of friction between rubberlike polymers and steel, **35** 379
JANACEK, J., Reactions of polymers in bulk. I. Influence of fillers on the degree of crosslinking of natural rubber, **35** 563
II. Influence of crosslink density on the mechanical deformation properties of filled vulcanizates, **35** 572
III. Influence of specific surface and of filler concentration on deformation behavior, **35** 581
IV. Influence of structure and agglomeration of carbon black particles on deformation behavior, **35** 590
V. Deformation behavior of vulcanizates filled with inorganic filler, **35** 833
VI. Influence of deformation on the decrease of crosslinking density, **35** 839
JANSSEN, H. J. J. AND K. V. WEINSTOCK, Carbon black-latex masterbatches, **34** 1485
JENKINS, M. C., see VANDERHOFF, J. W., Theoretical consideration of interfacial forces involved in coalescence of latex particles, **40** 1246
JERMYN, T. E., see BRENNAN, J. J., **40** 817
JOHNSON, B. L., see WEISSERT, F. C., **40** 590
JOHNSON, J. F., see BARRALL, E. M., **39** 1513
JOHNSON, J. F., see PORTER, R. S., **38** 243
JOHNSON, P. R., see MAYNARD, J. T., **36** 882, 963
JOHNSON, V., see TOBOLSKY, A. V., **40** 614
JOHNSON, W. D., see URANECK, C. A., **38** 802
JONES, H. C., see BALDYGA, H., **39** 1347
JONES, M. N., see BOOTH, C., **38** 325
JOSE, K. A. AND S. BANERJEE, Studies of the compounding of nitrile rubber with shellac, **39** 763

JUVE, A. E., On testing rubber (Goodyear address), **37**(2)xxiv
——, J. R. BEATTY, AND R. H. KLINE, The rotomill—a continuous mixing device, **33** 98
——, P. W. KARPER, L. O. SCHROYER, AND A. G. VEITH, **37** 434
——, AND A. G. VEITH, Abrasion-reinforcement: methods of evaluation, **35** 1276; **36** 313
——, see BEATTY, J. R., **38** 719
——, see CONANT, F. S., **31** 562

KAINRADL, P. AND F. HANDLER, Tear strength of vulcanizates, **33** 1438
KAISER, G., see HUMMEL, K., **38** 581
KAIZERMAN, S., see MORTON, M., **32** 814
KALLENBERGER, R. H., see DOLLINGER, R. E., **40** 1311
KALMANSON, A. E., see BUTYAGIN, P. Y., **33** 942
KANAVEL, G. A., P. A. KOONS, AND R. E. LAUER, Fungus resistance of millable urethans, **39** 1338
KAPLUNOV, M. I., see DOGADKIN, B. A., **32** 785
KARGIN, V. A., T. I. SOGOLOVA, AND T. K. METELSKAYA, Reinforcement of polyisobutylene with anisodiametric filler particles of poly(ethylene terephthalate), **36** 111
——, see BERLIN, A. A., **34** 760
——, see IGONIN, L. A., **34** 953
——, see PAVLYUCHENKO, G. M., **36** 1003
——, see SLONIMSKII, G. L., **33** 959
——, see SOGOLOVA, T. I., **37** 627
——, see ZUBOV, P. I., **32** 539
KARMIN, B. K., see ANIKANOVA, K. F., **31** 30
KARPER, P. W., see JUVE, A. E., **37** 434
KARPOV, V. L., see DOGADKIN, B. A., **32** 785
KASATKINA, N. G., Determination of isoprene unit structures in polyisoprene rubbers, **33** 587
——, see YAKUBCHIK, A. I., **32** 284, 288
KATO, K., see OHAMA, Y., **37** 758
KAVTARADZE, N. N., see LYGIN, V. I., **35** 311
KAWABATA, S. AND P. J. BLATZ, Creep failure studies on SBR vulcanizates. I, **39** 923
KAZBEKOV, E. N., see BRESLER, S. E., **33** 462, 469; **39** 318
KEARSLEY, E. A., see BERNSTEIN, B., **38** 76
KELL, R. M., B. BENNETT, AND P. B. STICKNEY, Melting and glass transitions in polyisobutylene, **31** 499
KELLER, H. E., see LOWMAN, M., **37** 866
KELLER, D. P., see D. A. RAIBLE, **39** 1276
KELLY, R. J., H. K. GARNER, H. E. HAXO, AND W. R. BINGHAM, Ethylene propylene copolymers produced with soluble catalysts, **35** 1101
KEMME, G., see SCHEELE, W., **33** 326
KEMP, A. R., Constitution and variability of rubber from individual trees, **32** 1228
KEMPERMANN, T., Age resisters for rubber. A general study, **37** 720
——, AND R. CLAMROTH, Determination of relative damping at various prestresses, **33** 282
KENDALL, C. E., see HUKE, D. W., **37** 709
KEPERSHA, L. M., see PINEGIN, V. A., **32** 503
KERN, W. F., Coefficient of wet friction of tire treads, **40** 984
——, see FRANCK, A., **35** 76
KERRUTT, G., see SCHEELE, W., **38** 176
KERSCHER, J. F., see BROWN, R. J., **35** 546
KESKKUKLA, H., see MOLAU, G. E., **40** 909
KEYTE, D. N., see WALTERS, M. H., **38** 62
KHERASKOVA, E. P., N. A. OKHAPKINA, AND V. N. PROVOROV, Determination of free sulfur in stocks cured with sulfur containing accelerators, **35** 498
KHODZHAEVA, I. V. AND Y. A. KISSIN, Radiochromatographic separation of mixtures of sulfur and accelerators, **35** 449
KHRENNIKOVA, E. K., see TINYAKOVA, E. I., **31** 353; **32** 220
KIENER, P. E., see BLY, R. M., **39** 956
KILBOURNE, H. W., G. R. WILDER, J. E. VAN VERTH, J. O. HARRIS, AND C. C. TUNG, Chemical inhibition of ozone degradation of SBR, **32** 1155
KILLMANN, E., see PATAT, E., **39** 36
KIME, J. M., see TRIVISONNO, N. M., **35** 937
KIMMER, W. AND E. O. SCHMALZ, Infrared analysis of butadiene polymers, **33** 639
KING, L. F., Solvents for synthetic rubbers, **40** 1170
KIPKINA, B. T., see REZTSOVA, E. V., **36** 480
KISELEV, A. V., see LYGIN, V. I., **35** 311
KISSIN, Y. V., see KHODZHAEVA, I. V., **35** 449
KIYEK, H. AND TH. G. F. SCHOON, Electron microscope investigation of states of distribution in elastomer blends, **40** 1238
KLAUZEN, N. A. AND B. A. DOGADKIN, Infrared spectroscopy in the study of reactions between rubber and sulfur, **33** 208
——, see DOGADKIN, B. A., **32** 785
KLEBANSKII, A. L. AND L. P. FOMINA, Radical and ionic reactions of tetraethylthiuram disulfide, **33** 1062
——, N. J. ZUKERMAN, AND L. P. FOMINA, Mechanism of sulfur reaction in the polymerization of chloroprene and of thiuram reaction in the degradation and structurization of polychloroprene, **32** 588
——, see MYULLER, B. E., **38** 452
KLEEMAN, W. AND G. ERBEN, Thermostability of sulfenamide accelerators in tire compounds, **37** 204
KLEINFELD, M. J., see HUNTER, B. A., **39** 211
KLINE, R. H., see AMBELANG, J. C., **36** 1497
——, see JUVE, A. E., **33** 98
KLITENICK, G. S., see RATNER, S. B., **32** 471
KNILL, R. B., see BROWN, R. J., **35** 546
KNIPP, E. A., see GAMBLE, L. W., **38** 823
KOBAYASHI, G., see IWAKURA, Y., **33** 416
KOLBE, G., see EDELMANN, K., **32** 1039
KOLECHKOVA, M. F., see BRESLER, L. S., **37** 121

KOLOBENIN, V. N., see BLOKH, G. A., **31** 356
KOLOMYTSEVA, A. I., see BUIKO, G. N., **33** 556
KOMSKAYA, N. F. AND G. L. SLONIMSKII, Mutual solubility of polymers. I. Physico-mechanical properties of stocks prepared from a mixture of polymers, **31** 49
——, see ANIKANOVA, K. F., **31** 30
——, see SLONIMSKII, G. L., **31** 244
KONGAROV, G. S., see BARTENEV, G. M., **36** 668
KONYTOVSKAYA, S. P., see VOTINOV, M. P., **33** 988
KOONS, P. A., see KANAVEL, G. A., **39** 1338
KOORAJIAN, S., see RAIBLE, D. A., **39** 1276
KORABLEV, Y. G., see LEVITIN, I. A., **32** 889; 1675
KORCHAGINA, E. P., see GLIKMAN, S. A., **32** 531
KORMILZEVA, Z. P., see BLOKH, G. A., **32** 770
KORNEV, A. E., see LEVITIN, I. A., **32** 889; 1675
KORNILTSEVA, Z. P., see BLOKH, G. A., **31** 356
KOROTKOV, A. S., N. N. CHESNOKOVA, AND L. B. TRUCHMANOVA, Catalytic polymerization of isoprene with butyllithium, **33** 610
KOROTKOV, A. A. AND G. V. RAKOVA, Synthesis of isoprene tagged with C^{14}, **34** 991
——, see BRESLER, S. E., **33** 669
——, see RAKOVA, G. V., **33** 623
KORYUSHENKO, Z. A., see DOLGOPLOSK, B. A., **32** 328
KOSTIUKOV, N., see SHATALOV, V. P., **32** 701
KOVACIC, P. AND HEIN, R. W., Crosslinking of unsaturated polymers with dimaleimides. I. **35** 520
Crosslinking of polymers with dimaleimides. II. **35** 528
KOVALEVA, N. V., see LYGIN, V. I., **35** 311
KOVARSKAYA, B. M., L. M. GOLUBENKOVA, M. S. AKUTIN, AND I. I. LEVANTOVSKAYA, Production and properties of block polymers, **33** 964
KRASNOSELSKAYA, I. G., see ERUSALIMSKII, B. L., **38** 991
KRAUS, G., Swelling of filler-reinforced vulcanizates, **37** 6
Interaction of elastomers and reinforcing fillers, **38** 1070
——, C. W., CHILDERS, AND K. W. ROLLMANN, Stress softening in carbon black reinforced vulcanizates. Strain rate and temperature effects, **39** 1530
—— AND R. L. COLLINS, Odd electrons in rubber reinforcing carbon blacks, **32** 107
——, AND J. T. GRUVER, Rheological properties of multichain polybutadienes, **38** 893
Rheological properties of *cis*-polybutadiene, **38** 907
Steady state melt viscosity of plasticized hydrocarbon elastomers, **40** 734
——, AND K. W. ROLLMANN, Behavior of *cis*-polybutadiene during mastication, **38** 493
Carbon black surface areas by the Harkins and Jura absolute method, **40** 1305
——, see ARNOLD, P. M., **34** 265
——, see CHILDERS, C. W., **40** 1183
——, see COLLINS, R. L., **33** 993
——, see GRUVER, J. T., **38** 881
——, see SHORT, J. N., **32** 614
KRIGBAUM, W. R., J. V. DAWKINS, G. H. VIA, AND Y. I. BALTA, Effect of strain on thermodynamic melting temperature of polymers, **40** 788
——, AND R.-J. ROE, Survey of the theory of rubberlike elasticity, **38** 1039
——, see ROE, R.-J., **36** 351
KRIMIAN, J. A., see ENGLAND, W. D., **32** 1143
KROL, L. H., Butadiene and isoprene rubber in giant tire treads, **39** 452
KROL, V. A., see BRESLER, S. E., **31** 278
KROPACHEV, V. A., B. A. DOLGOPLOSK, AND N. E. NIKOLAEV, Complex formation and chain structure in the polymerization of divinyl with butyllithium, **33** 636
KROPACHEVA, E. N., see BOLDYREVA, I. I., **33** 985
——, see BRESLER, L. S., **37** 121
——, see DOLGOPLOSK, B. A., **32** 1036
——, see ERMAKOVA, I. I., **35** 618
KRONMAN, A. G., see BERLIN, A. A., **34** 760
KROTOVA, B. A., see MOROZOVA, L. P., **33** 240, 1180
KRUSE, J. AND T. TIMM, Temperature dependence of the mechanical and stress-optical behavior of elastomers, **33** 763
KRYGINA, M. K. G., see SHATALOV, V. P., **32** 701
KRYMOV, B. M., see PAVLOV, N. N., **32** 907
KUHN, W., E. PETERLI, AND H. MAJER, Relation between the anomalous freezing point depression and the mechanical-elastic behavior of gels, **33** 245
KUKHTENKO, I. I., see BLOKH, G. A., **33** 1015
KULEZNEV, V. N., see DOGADKIN, B. A., **33** 940
KUNTZ, I. AND GERBER, A., The butyllithium-initiated polymerization of 1,3-butadiene, **33** 628
KURTZ, S. S., JR., see FERRIS, S. W., **32** 379
KUSOV, A. B., Work of rubber elongation, **32** 40
——, V. I. TROFIMOVA, AND YU. I. NILOVA, Changes in the specific volume of rubber during elongation, **31** 513
KUSUMOTO, H. AND H. S. GUTOWSKY, Proton magnetic resonance in natural rubber: comparison with dielectric measurements, **37** 268
KUSY, P., see ERICKSON, E. R., **32** 1062
KUVSHINSKII, E. V. AND M. M. FOMICHEVA, Effect of primary molecular weight on the dynamic properties of cured rubber, **32** 651
——, AND E. A. SIDOROVICH, Effect of vulcanization on the dynamic properties of rubber, **32** 662
——, see FOMENKO, B. A., **37** 365
——, see RUDAKOV, A. P., **37** 291
——, see SIDOROVICH, A. V., **37** 355
——, see VOTINOV, M. P., **32** 1016; **33** 988

KUZINA, L. S. AND GURYANOVA, E. N., Isotopic exchange of free sulfur with thiurams, isothiocyanates and dithiocarbamates, **34** 600
KUZMINSKII, A. S., Aging and stabilization of raw and cured rubbers, **39** 88
—— AND L. V. BORKOVA, Vulcanization of hard rubber, **32** 195
—— AND V. F. CHERTKOVA, The nature of optimum vulcanization in natural rubber, **32** 562
——, L. S. FELDSHTEIN, AND S. A. REITLINGER, The blooming of sulfur and other ingredients from compounded stocks, **35** 147
——, V. D. ZAITSEV, AND N. N. LEZHNEV, Suppression of the activity of metal ions in the oxidation of rubber, **36** 541
——, see ANGERT, L. G., **34** 807
——, see LEZHNEV, N. N., **33** 796
——, see LYUBCHANSKAYA, L. I., **34** 922
——, see POSTOVSKAYA, A. F., **31** 747

LACINA, J. L., see GOOD, W. D., **35** 661
LADD, M. W., see LADD, W. A., **34** 697
LADD, W. A. AND M. W. LADD, Modern role of the electron microscope in rubber research, **34** 697
LAKE, G. J. AND P. B. LINDLEY, Cut growth and fatigue of rubbers. II. Experiments on a noncrystallizing rubber, **38** 301
Mechanical fatigue limit for rubber, **39** 348
Role of ozone in dynamic cut growth of rubber, **39** 1053
LAL, J. AND J. E. MCGRATH, Effect of sulfur during radiation curing of poly(vinyl ethyl ether) and ethylene propylene rubber, **36** 248
Vulcanization of poly(vinyl alkyl ethers) with dicumyl peroxide and sulfur, **36** 1159
—— AND K. W. SCOTT, Properties and structure of elastomers, **39** 881
LAMM, A. AND G. LAMM, Reinforcement of natural latex rubber by carbon black and ionizing radiation, **35** 848
LAMM, G., see LAMM, A., **35** 848
LAND, J. E., see HAMMETT, R. E., **39** 206
LANDEL, R. F. AND R. F. FEDORS, Fracture of amorphous polymers, **40** 1049
—— AND T. L. SMITH, Viscoelastic properties of rubberlike composite propellants and filled elastomers, **35** 291
——, AND P. J. STEDRY, Stress as a reduced variable: stress relaxation of SBR rubber at large strains, **34** 884
——, see FEDORS, R. F., **39** 712
LANE, J. H., see BAHARY, W. S., **40** 1529
LANING, S. H., M. P. WAGNER, AND J. W. SELLERS, The determination of zinc oxide in rubber vulcanizates by x-ray diffraction, **33** 890
LANZA, V. L., see HAWKINS, W. L., **32** 1171
LARCHAR, T. B., see SCHROEDER, H., **39** 1184
LARSEN, G. M., see GEHMAN, S. D., **40** 969
LAUER, R. E., see KANAVEL, G. A., **39** 1338
LAVRENTEV, V. V., Static friction and the law of rubber friction, **36** 365
——, see BARTENEV, G. M., **34** 461, 1162; **36** 64
LAYER, R .W., Absence of free radical cracking of stressed rubber, **33** 78
Reaction of ozone with p-phenylenediamine and related compounds, **39** 1594
LAZAR, M., I. PAVLINEC, Z. MANASEK, M. MICKO, AND D. BEREK, Ozonation of atactic polypropylene, **36** 527
——, see MANÁSEK, Z., **36** 532
LE BEAU, D. S., Science and technology of reclaimed rubber (Review), **40** 217
LEBEL, P., see HULOT, H., **37** 297
LEBOVITS, A., Effect of high hydrostatic pressure on the permeability of elastomers to water, **39** 1298
LE BRAS, J., Reinforcement of rubber by resins, **35** 1308
——, J.-C. DANJARD, AND M. BOUCHER, Mechanism of protection by the deactivating effect, **31** 849
——, C. PINAZZI, AND G. MILBERT, Modification of rubber by reaction with maleic anhydride, **31** 664
——, see DE MERLIER, J., **36** 1043
LEE, D. F., Cyclization of natural rubber, **36** 1005
LEE, L.-H., see SHELTON, J. R., **31** 415
LEE, T. C. P., see LYONS, P. F., **39** 1634
——, see NORLING, P. M., **38** 1198
LEEMING, P. A., R. S. LEHRLE, AND J. C. ROBB, Polymerization of chloroprene II. Role of dimers in thermal polymerization, **39** 1390
LEHR, M. H., Some stereoregular polymerizations of conjugated dienes, **36** 1571
LEHRLE, R. S., see LEEMING, P. A., **39** 1390
LEINEWEBER, G., see WESTLINNING, H., **35** 615
LEININGER, R. I., see FALB, R. D., **39** 1288
LENAS, L. P., Evaluation of crosslinking coagents in ethylene-propylene rubber, **37** 229
LEVANTOVSKAYA, I. I., see KOVARSKAYA, B. M., **33** 964
LEVEQUE, J., see DE MERLIER, J., **37** 457
LEVINE, N. B., see GREEN, J., **39** 1222
LEVITIN, I. A., Y. G. KORABLEV, A. E. KORNEV, AND B. L. BARITSKII, Bond strength of tread and breaker stocks under repeated deformations, **32** 889, 1675
LEWIS, F. M., Science and technology of silicone rubber, **35** 1222
LEWIS, J. E. AND M. L. DEVINEY, JR., Migration of extender oil in natural and synthetic rubber, **40** 1570
LEWIS, J. H., Physical properties of two O-Ring compounds after exposure to reactor radiation, **39** 1258
LEZHNEV, N. N., T. S. NIKITINA, AND A. S. KUZMINSKII, Modification of carbon black with ionizing radiations, **33** 796
——, see KUZMINSKII, A. S., **36** 541
LINDLEY, P. B., see GENT, A. N., **31** 393; **34** 925; **38** 292
——, see LAKE, G. J., **38** 301; **39** 348, 1053
LINHARDT, F., Entropy elasticity in high polymers, **40** 777

LINNIG, F. J., E. J. PARKS, AND R. D. STIEHLER, Effect of certain crystalline substances on physical properties of elastomers. I. Stress strain behavior, **39** 1041
——, E. J. PARKS, AND L. A. WOOD, Ethylene propylene copolymers: Crystallinity, infrared, and creep studies, **39** 940
——, AND J. E. STEWART, Infrared study of some structural changes in natural rubber during vulcanization, **31** 719
LIPKINA, B. G., see REZTSOVA, E. V., **33** 946
LISHANSKII, M. S., V. A. TSITOKHTSEV, AND N. D. VINOGRADOVA, Reactions of carbenes with unsaturated polymers, **40** 934
LISKA, J. W., see CLAXTON, W. E., **34** 777
——, see CONANT, F. S., **33** 1218
——, see HALL, G. L., **38** 782
LITTLE, J. R. AND R. A. GREGG, Relation of modulus of urethan rubber to molecular weight of polyester, **39** 1089
——, see TAWNEY, P. O., **33** 229
LIU, S. AND N. R. AMUNDSON, Analysis of polymerization kinetics and the use of a digital computer, **34** 995
LIVANOVA, I. V., see RAEVSKII, V. G., **35** 1041, 1047
LIVINGSTON, D. I. AND L. E. HILDENBRAND, A compact test instrument for determining the indentation failure of elastomers, **37** 14
——, see GEHMAN, S. D., **34** 506
——, see YEH, G. S., **34** 937
LLOYD, D. G., see DIBBO, A., **36** 911
LOAN, L. D., Reaction between cumyl peroxide and butyl rubbers, **38** 15
Peroxide crosslinking of ethylene propylene rubber, **38** 22
Crosslinking efficiencies of cumyl peroxide in unsaturated synthetic rubbers, **38** 573
Mechanism of the peroxide vulcanization of elastomers, **40** 149
LOEFFLER, B. B., see HAWKINS, W. L., **32** 1171
LOMBARDI, G. E., see NATTA, G. E., **40** 400
LONG, D. M., JR., see FOLKMAN, J.,**40** 928
LORD, S. S., JR., see MITCHELL, J., JR., **34** 1553
LORENZ, O. AND E. ECHTE, Vulcanization of elastomers. 13. Vulcanization of natural rubber with sulfur in the presence of mercaptobenzothiazole. II, **31** 117
18. Vulcanization of natural rubber with sulfur in the presence of mercaptobenzothiazole. III, **31** 548
——, AND C. R. PARKS, Antioxidant efficiency of p-phenylenediamines in natural rubber vulcanizates, **34** 816
Titrimetric determination of N,N'-disubstituted p-phenylenediamines, **35** 676
Mechanism of antiozonant action. I. Consumption of p-phenylenediamines in rubber vulcanizates during ozonization, **36** 194
II. Effect of antiozonants on the ozonization of 2,6-dimethyl-2,6-octadiene and 2-butene, **36** 201
——, see AMBELANT, J. C., **36** 1497
LOWMAN, M. AND H. E. KELLER, Dynamic testing of automotive rubber parts by the resonant beam tester. Effect of polymer, deflection, age, and temperature on dynamic rate, **37** 866
LUDWIG, R., Diffusion of sulfur in rubber in relation to vulcanization, **33** 1029
LUFTER, C. H., see STARMER, P. H., **34** 964; **35** 257
LUKIN, B., see DOGADKIN, B., **31** 361
LUKOMSKAYA, A. I., Features of the reinforcing action of carbon blacks deduced from the tear propagation of filled vulcanizates, **34** 57
Approximate analysis of the stressed state of rubber specimens, tear tested by various methods, **34** 119
——, see TSYDZIK, M. A., **33** 42
LUMB, P. B., see DORKO, Z. J., **35** 705
LUND, J. K. AND H. A. POHL, Anomalous flow of polyisobutylene, **40** 1492
LUPTON, G. N., see SABEY, B. E., **37** 878
LUTTROPP, H., Thermal vulcanization of synthetic rubber, **31** 132
LUTZ, G. A., see UNGAR, I. S., **34** 205
LYGIN, V. I., N. V. KOVALEVA, N. N. KAVTARADZE, AND A. V. KISELEV, Adsorption properties and infrared spectra of oxidized carbon blacks, **35** 311
LYON, F., see SWEITZER, C. W., **34** 709
LYONS, P. F., T. C. P. LEE, AND A. V. TOBOLSKY, Labile crosslinks in "saturated" elastomers as measured by stress relaxation, **39** 1634
LYUBCHANSKAYA, L. I. AND A. S. KUZMINSKII, Degradation of main chains and crosslinks in the aging of vulcanizates, **34** 922

MCCOOL, J. C., Studies of ozone attack of vulcanizates in a closed system, **37** 583
MCCULLOUGH, J. P., see GOOD, W. D., **35** 661
MCDONEL, E. T., see SHELTON, J. R., **33** 342
MCGAVACK, J., Preservation and concentration of hevea latex, **32** 1660
One hundred top contributors to the world's rubber literature. II. 1932–1963, **39**(2)liv
MCGRATH, J. E., see A. N. GENT, **39** 643
——, see LAL, J., **36** 248, 1159
MCHENRY, W. D., Tritium tracer study of antioxidant action in SBR, **35** 692
MCINDOE, K. G., Breeding of hevea brasiliensis, **34** 413
MCLEOD, L. A., see FORBES, W. G., **32** 48
——, see HULME, J. M., **36** 502
MCMANUS, S. P., Elastomeric seals for the Army's LANCE Missile, **39** 1233
MACKNIGHT, W. J., see TOBOLSKY, A. V., **39** 524; **40** 614
MCNEILL, I. C., Radiochemical investigation of polymer unsaturation. Reaction of butyl rubber with radiochlorine, **36** 1071
MCPHERSON, A. T., Electrical properties of elastomers and related polymers, **36** 1230
MCSWEENEY, E. E., see PALINCHAK, S. T., **31** 374
——, see STICKNEY, P. B., **31** 369
MAGNUSSON, A. B., see SMITH, T. L., **33** 1092; **35** 753
MAISEY, L. J. AND J. SCANLAN, Crosslink formation during aging of natural rubber vulcanizates, **38** 374

MAJER, H., see KUHN, W. E., **33** 245
MAKOWSKI, H.-S., W. P. CAIN, AND P. E. WEI, Readily curable chlorinated poly-α-olefins and ethylene-α-olefin copolymers, **38** 599
MALKINA, K. E. AND A. P. PUKHOV, Enhancement of bond strength in tire casings by heat treatment, **32** 513
MALNEV, A. F., see BLOKH, G. A., **32** 628
MANARESI, P., see ZANNETTI, R., **36** 459
MANASEK, Z., D. BEREK, M. MICKO, M. LAZAR, AND J. PAVLINEC, Formation and decomposition of hydroperoxides of atactic polypropylene, **36** 532
MANASEK, Z., see LAZAR, M., **36** 527
MAASSEN, G. C., Symposium on physical testing, **38** 687
——, see YOUMANS, R. A., **32** 647
MADORSKY, S. L., see STRAUS, S., **32** 748
MADORSKY, I., see WOOD, L. A., **33** 1132
MAEKAWA, E., R. G. MANCKE, AND J. D. FERRY, Dynamic mechanical properties of crosslinked rubbers. II. Effects of crosslink spacing and initial molecular weight in polybutadiene, **39** 905
——, see FERRY, J. D., **39** 897
——, see YASUDA, G., **40** 1470
MAGNUS, G., R. A. DUNLEAVY, AND F. E. CRITCHFIELD, Stability of urethan elastomers in water, dry air and moist air environments, **39** 1328
MANCKE, R. G., see FERRY, J. D., **39** 897
——, see MAEKAWA, E., **39** 905
MANDEL, J., F. L. ROTH, M. N. STEEL, AND R. D. STIEHLER, **33** 502
MANDELKERN, L., Melting of crystalline polymers, **32** 1392
——, see ROBERTS, D. E., **31** 469
MANN, J., see HAWARD, R. N., **38** 1180
MANO, E. B., Rapid identification of polyisoprene in cured and uncured compounds, **33** 591
MAREI, A. I. AND E. A. SIDOROVICH, Effect of molecular weight on dynamic mechanical properties of SKD *cis*-1,4-butadiene rubber, **40** 517
MARINANGELI, A., see NATTA, G., **40** 400
MARKOVA, G. S., see RAZIKOV, K. K., **36** 799
MARKOV, V. V., see TUTORSKII, I. A., **36** 1019
MARON, S. H. AND N. NAKAJIMA, Theory of the thermodynamic behavior of non-electrolyte solutions. II. Application to the system rubber-benzene, **33** 798
MARRA, J. V., see ROBINSON, A. R., **35** 1083
MARSH, P. A., A. VOET, AND L. D. PRICE, Electron microscopy of heterogeneous elastomer blends, **40** 359
MARSH, W. D., see CODDINGTON, D. M., **38** 741
MARTEL, R. F. AND D. E. SMITH, Vulcanization of neoprene with N,N'-dinitroso-p-phenylene-bis(hydroxylamine) salts, a new class of curing agents, **34** 658
Structure-property relationships of N,N'-dinitroso-p-phenylene-bis(hydroxylamine) salts. Vulcanization of nonhalogenated elastomers, **35** 141
——, see RAUSCH, K. W., **38** 140
MARTIN, S. M., JR., see PATRICK, J. B., **39**(5)cl
MARTIN, G. M., see WOOD, L. A., **37** 850
MASON, P., High-speed fracture in rubber, **32** 13
Relation of physical behavior to molecular packing in crosslinked rubber, **35** 906
Strain dependence of rubber viscoelasticity. II. The influence of carbon black, **35** 918
III. Natural and butyl rubber at high extensions, **35** 927
Thermal expansion and viscoelasticity of rubber in relation to crosslinking and molecular packing, **39** 408
MASSON, P.-Y., Injection molding of rubber, **37** 88
MATREYEK, W., see HAWKINS, W. L., **32** 1164, 1171
MAU, G., see SCHEELE, W., **31** 315; **32** 150; **33** 326
MAURER, J. J., Relation between glass transition temperature and composition of ethylene propylene copolymers, **38** 979
MAVRIGIAN, G., Evaluations of the tire contour integral by elliptic integrals, **40** 961
MAXEY, F. S., see GEHMAN, S. D., **38** 757
MAY, W., Level and variation of tensile strength in relation to dispersion of compounding ingredients, **37** 826
MAYER, R., see GALLOT, B., **40** 932
MAYNARD, J. T. AND P. R. JOHNSON, Ionic crosslinking of chlorosulfonated polyethylenes, **36** 882
Crosslinking chlorosulfonated polyethylenes, **36** 963
MAYOR, R. H., see SCHOENBERG, E., **37** 103
MAYOROVA, V. E., see SLOBODIN, YA. M., **38** 674
MAZUREK, V. V., see ERUSALIMSKII, B. L., **38** 991
MAZZANTI, G., see NATTA, G., **36** 988
MEDALIA, A. I., Dispersion of carbon black in rubber: Revised calculation procedure, **34** 1134
——, see BOONSTRA, B. B., **36** 115
MEDVEDEVA, A. M., B. V. DERYAGIN, AND S. K. ZHEREBVOV, Adhesion effects in bonding rubber to metal by leukonat adhesive, **32** 67
——, see DERYAGIN, B. V., **33** 757
MEIER, D. J., see DAVISON, S., **38** 457, 475
MELAMED, C. L., see BLOKH, G. A., **34** 588
MELNIKOVA, N. V., see RATNER, S. B., **32** 1199
MELTZER, T. H. AND W. J. DERMODY, Fraction of effective sulfur crosslinking in SBR vulcanizates, **37** 221, 225
MERCURIO, A. AND A. V. TOBOLSKY, Stress relaxation studies of scission in rubber vulcanizates, **33** 72
MERRETT, F. M., The separation and characterization of graft copolymers from natural rubber, **31** 819
Graft polymers with preset molecular configurations, **31** 829
METELSKAYA, T. K., see KARGIN, V. A., **36** 111
METZNER, A. B., J. L. WHITE, AND M. M. DENN, Behavior of viscoelastic materials in short time processes, **40** 1426
MEYER, G. E., see PIERSON, R. M., **31** 213

MICKO, M., see LAZAR, M., **36** 527
——, see MANASEK, Z., **36** 532
MIDDLETON, K. R., Iodimetric determination of milligram amounts of rubber hydrocarbon, **37** 733
MIKHAILOV, G. P. AND B. I. SAZHIN, Effect of crystallization of polymers on dielectric loss, **33** 741
MIKHALEV, M. F., Power and thrust force of mill rolls during the mastication of rubber, **33** 868
MIKHAILOVA, S. S., see TAUBERMAN, A. B., **36** 143
MIKLUKHIN, G. P., see BLOKH, G. A., **33** 1015
MILBERT, G., see LEBRAS, J., **31** 664
MILLER, C. B., see BOENIG, H. V., **39** 974
MILLER, H. T. AND G. E. WARNAKA, Strain-dependent properties of polymers. II. **39** 1428
——, see G. E. WARNAKA, **39** 1421
MILLIGAN, B., Vulcanization accelerator and activator complexes. 2. Chemistry of amine and zinc carboxylate complexes of zinc and cadmium benzothiazolyl mercaptides, **39** 1115
MILLOWAY, W. T. AND J. H. WIEGAND, Failure criteria for some polyurethan propellants, **37** 511
MILLS, I. G., see PEARSON, R. W., **38** 94
MINE, H., see OHAMA, Y., **37** 758
MINOURA, Y., Organic sulfides and polysulfides. I. Desulfurization reactions, **31** 608
II. Reactions with hydrazine, ethylenediamine and ammonia, **31** 612
III. Reactions with amines, **31** 615
IV. Reactions with doctor solution, silver nitrate, cupric acetate and lead acetate, **31** 618
V. Reactions with methyl iodide, **31** 621
VI. Reactions of metallic oxides with polysulfide rubbers, **31** 624
Structure and molecular refraction of organic polysulfides, **31** 815
Structure and ultraviolet absorption spectra of polysulfides, **31** 808
MISHUSTIN, I. U., see ALEKSEENKO, V. I., **32** 519
MITCHELL, J., JR. AND S. S. LORD, JR., Instrumental methods for the analysis of polymeric materials, **34** 1553
MITCHELL, J. C., Melting point of *cis*-1,4-polybutadiene, **38** 921
MITCHELL, J. M., see RUPAR, W., **35** 1028
MOAKES, R. C. W., see HUGHES, B. G., **36** 875
MOCHEL, V. D., NMR compositional analysis of copolymers, **40** 1200
MOCKER, F., Polarographic determination of accelerators, antioxidants, and other rubber chemicals. I. **32** 1254
MODINI, G., see BRUZZONE, M., **37** 451
MOLAU, G. E. AND H. KESKKULA, Heterogeneous polymer systems. IV. Mechanism of rubber formation in rubber modified vinyl polymers, **40** 909
MONTERMOSO, J. C., Fluorine-containing elastomers, **34** 1521
MOONEY, M., Rheological unit in a high polymer under continuous shear, **37** 503
MOORE, C. G., Crosslinks in TMTD, zinc oxide, natural rubber vulcanizates, **33** 394
——, L. MULLINS, AND P. M. SWIFT, Structural characterization of vulcanizates. I. Crosslinking efficiency of sulfur in unaccelerated natural rubber-sulfur systems, **35** 105
——, AND M. PORTER, Structural characterization of natural rubber vulcanizates, **36** 547; 1173
——, B. SAVILLE, AND A. A. WATSON, Acceleration by thiourea and related compounds of the tetramethylthiuram disulfide vulcanization of natural rubber, **34** 795
—— AND J. SCANLAN, Determination of degree of crosslinking in natural rubber vulcanizates. Part VI. Evidence for chain scission during the crosslinking of natural rubber with organic peroxides, **34** 309
—— AND B. R. TREGO, Structural characterization of vulcanizates. II. Use of triphenylphosphine to determine the structures of sulfur linkages in unaccelerated natural rubber-sulfur vulcanizates, **35** 113
—— AND W. F. WATSON, Determination of degree of crosslinking in natural rubber vulcanizates, Part II, Erratum, **31** 958
——, see BATEMAN, L., **31** 1055, 1065, 1090; **35** 633
MOORE, G. R., see SCHOLLENBERGER, C. S., **35** 742
MOORE, M. S., see CIPRIANI, C., **40** 947
MORAND, J., Photodegradation of rubber, **39** 537
MORITA, E. AND E. J. YOUNG, Study of sulfenamide acceleration, **36** 844
——, see TRIVETTE, C. D., JR., **35** 1360
MOROZOVA, L. P. AND B. A. KROTOVA, Electrical and diffusion processes in the adhesion of two polymers, **33** 240
—— AND N. A. KROTOVA, Nature of an adhesion bond between two high-molecular weight compounds, **33** 1180
MOROZOVA, N. A., see DOGADKIN, B. A., **33** 970
MORRIS, M. C., Rates of crystallization of *cis*-1,4-poly-butadiene in elastomer blends, **40** 341
MORTON, M., S. KAIZERMAN, AND M. W. ALTIER, Swelling of latex particles, **32** 814
MOSEVITSKII, M. I., see BRESLER, S. E., **33** 669, 689, 696; **34** 986
MUELLER, W. J., S. PALINCHAK, AND P. B. STICKNEY, Accelerated ozone test for predicting outdoor effectiveness of ozone protective waxes in SBR, **37** 990
——, see PALINCHAK, S. T., **31** 374
——, see STICKNEY, P. B., **31** 369
MULA, A., see SCHULZ, G. V., **35** 908
MULLER, F. H. AND K. HUFF, Dependence of dielectric relaxation spectrum of rubber on stretching, **32** 1027
MULLER, H., see SCHEELE, W., **37** 910
MULLINS, L., Reinforcement of rubber by fillers. Tear resistance, **33** 315
Determination of degree of crosslinking in natural rubber vulcanizates. Part III, **34** 279, 708
Part IV. Stress-strain behavior at large extensions, **34** 290
—— AND A. G. THOMAS, Determination of degree of crosslinking in natural rubber vulcanizates. Part V. Effect of network flaws due to free chain ends, **34** 301
—— AND N. R. TOBIN, Carbon-black loaded rubber vulcanizates: volume changes in stretching, **31** 505
Stress softening in rubber vulcanizates. Part I. Use of a strain amplification factor to describe elastic behavior of filler reinforced vulcanized rubber, **39** 799
—— AND D. T. TURNER, Radiation crosslinking of rubber. III. Chain fracture, **33** 1072
—— AND W. F. WATSON, Mastication. IX. Shear dependence of degradation on hot mastication, **33** 91

——, see HARWOOD, J. A., **39** 814
——, see MOORE, C. G., **35** 105
MURAKAMI, Y., see ABE, M., **39** 609
MURPHY, E. A., Some early adventures with latex, **39**(3)lxxiii
MURRAY, R. M., Factors influencing the ozone resistance of neoprene vulcanizates under flexure, **32** 1117
—— AND J. D. DETENBER, First and second order transitions in neoprene, **34** 668
MUSTY, J. W. G., R. E. PATTLE, AND P. J. A. SMITH, Swelling of rubber in liquid and vapor (Schroeder's paradox), **40** 1166
MYULLER, B. E., N. P. APUKHTINA, AND A. L. KLEBANSKII, Influence of chemical structures of polyurethans on their crystallization capacities, **38** 452

NAAKE, H. J. AND K. TAMM, Sound propagation in plates and rods of elastomeric materials, **32** 21
NABORS, L. G. AND M. L. STUDEBAKER, Determination of carbon black type in filled rubber vulcanizates, **40** 1323
——, see STUDEBAKER, M. L., **32** 941, 1676; **36** 863; **40** 1319
NAKABAYASHI, T., see TSURUGI, J., **31** 779
NAKAJIMA, N., see MARON, S. H., **33** 798
NAPLES, F. J., see PIERSON, R. M., **31** 213
NATTA, G., From stereospecific polymerization to asymmetric autocatalytic synthesis of macromolecules, **38**(1)xxxvii
——, AND P. CORRADINI, General considerations on the structure of crystalline hydrocarbon polymers, **33** 703
Crystal structure of *cis*-1,4 polybutadiene, **33** 732
——, G. CRESPI, A. VALVASSORI, AND G. SARTORI, Polyolefin elastomers, **36** 1583
——, E. LOMBARDI, A. L. SERGE, A. ZAMBELLI, AND A. MARINANGELI, NMR study of polypropylenes of different structure and steric order, **40** 400
——, G. MAZZANTI, G. CRESPI, A. VALVASSORI, G. SARTORI, Sulfur vulcanizable ethylene-propylene rubbers, **36** 988
——, M. PEGORARO, F. SEVERINI AND S. DABHADE, Improvement of impact strength of polystyrene by compounding with styrene-grafted ethylene propylene elastomeric copolymers, **39** 1667
NAWAKOWSKI, A. C., see HUNTER, B. A., **33** 510
NAYLOR, F. E., **32** 614
NEIMARK, I. E., see BLOKH, G. A., **37** 714
NELSON, K. V., see DOLGOPLOSK, B. A., **32** 1036
——, see BOLDYREVA, I. I., **33** 985
NEWMAN, S. AND S. STRELLA, Stress strain behavior of rubber reinforced glassy polymers, **39** 1019
NEWTON, E. B., H. W. GRINTER, AND D. S. SEARS, Pico laboratory abrasion test, **34** 1
NIELSEN, L. E., Simple theory of stress strain properties of filled polymers, **40** 801
NIKITIN, V. I., New synthetic rubbers from copolymerization of butadiene and ene-yne diols, **37** 774
NIKITINA, T. S., see LEZHNEV, N. N., **33** 796
NIKOLAEV, N. I., see KROPACHEV, V. A., **33** 636
NIKULINA, R. V., see BLOKH, G. A., **33** 1015
NILOVA, YU. I., see KUSOV, A. B., **31** 513
NINOMIYA, K. AND G. YASUDA, Molecular weight dependence of relaxation spectra of amorphous polymers in the rubbery region. VI. Relationship between relaxation spectrum and molecular weight distribution estimated from the empirical blending law for two component systems, **40** 493
NINOMIYA, K., see YASUDA, G., **40** 1470
NISONOFF, A., see HOWLAND, L. H., **32** 706
NORLING, P. M., T. C. P. LEE, AND A. V. TOBOLSKY, Structure and reactivity in oxidation of elastomers, **38** 1198
——, AND A. V. TOBOLSKY, Oxidation of two isomeric elastomers: Poly(propylene oxide) and poly(vinyl methyl ether), **39** 278
NORTH, A. M., see BAWN, C. E. H., **40** 602
NOVIKOV, A. S., T. V. DOROKHINA, AND P. I. ZUBOV, Influence of molecular shape on the tensile strength of vulcanizates, **31** 27
——, see DEVIRTS, E. Y., **33** 790; **35** 700
——, see SHVETSOV, V. A., **34** 959; **35** 335
NOVIKOVA, E. N., Sorption of antioxidant from solution, **33** 528

OBERTH, A. E., Principle of strength reinforcement in filled rubbers, **40** 1337
O'DRISCOLL, K. F., T. YONEZAWA, AND T. HIGASHIMURA, Interpretation of microstructure of polyisoprene and polybutadiene obtained in anionic polmerization, **40** 883
OGILBY, S. R., see GEHMAN, S. D., **38** 757
OHAMA, Y. AND H. IBE, Cement mortars modified by SB latexes with variable styrene, **37** 758
OHORI, Y., see ROBBINS, R. F., **37** 154
OKHAPKINA, N. A., see KHERASKOVA, E. P., **35** 498
OKHRIMENKO, I. S., Vulcanization of rubber under high pressure, **33** 1019
OLSHANSKAYA, L. A., see BLOKH, G. A., **31** 356
ORLOVSKY, P., see FELDSTEIN, M., **31** 526; **32** 164
OSSEFORT, Z. T., Ozone resistance of elastomeric vulcanizates, **32** 1088
Influence of accelerator residues on age resistance of vulcanizates, **33** 490
——, AND F. B. TESTROET, Hydrolytic stability of urethan elastomers, **39** 1308
O'SULLIVAN, D. F., see AMBELANG, J. C., **35** 92
OSWALD, H. J., see PAPERO, P. V., **38** 999
OTH, J. F. M. AND P. J. FLORY, Thermodynamics of shrinkage of fibrous (racked) rubber, **31** 485
OUBRIDGE, P. S., see COLLINS, J. M., **38** 400
OVCHINNIKOV, Y. V., see IGONIN, L. A., **32** 527; **34** 953
OYANAGI, Y., see FERRY, J. D., **39** 897

PAKOMOVA, E. A., see BUIKO, G. N., **33** 556
PALINCHAK, S. T., E. E. MCSWEENEY, W. J. MUELLER, AND P. B. STICKNEY, Bound rubber and mechanical properties of diene polymers, **31** 374
——, see MUELLER, W. J., **37** 990
——, see STICKNEY, P. B., **31** 369
PANICH, R. M., see VOYUTSKII, S. S., **31** 1105
PAPERO, P. V., R. C. WINCKLHOFER, AND H. J. OSWALD, Mechanism of tire flatspotting and its relation to fiber properties, **38** 999
PAPERO, P. V., see CIPRIANI, C., **40** 947
PARISH, G. J., Calculation of the behavior of rubber-covered pressure rollers, **35** 403
PARISHER, R., see AUFDERMARSH, C. A., JR., **38** 526
PARKER, C. A., Analysis of accelerators and antioxidants, **31** 953
PARKS, C. R., see AMBELANG, J. C., **36** 1497
——, see COX, W. L., **39** 785
——, see LORENZ, O., **34** 816; **35** 676; **36** 194, 201
PARKS, E. J., see LINNIG, F. J., **39** 940, 1041
PARTRIDGE, E. G., Harry Linn Fisher (biographical sketch), **36**(2)xix
PATAT, F., E. KILLMANN, AND C. SCHLIEBENER, Adsorption of macromolecules from solution, **39** 36
—— AND G. SPOTT, Nonnewtonian flow of polymer solutions, **39** 1411
PATRICK, J. B. AND S. M. MARTIN, JR., J. C. Patrick—Goodyear Medalist, **35**(5)cl
PATRIKEEV, G. A., Basic problems in the theory of bond strength between the plies of a rubber article, **32** 1192
PATTERSON, D., Thermodynamics of non-dilute polymer solutions, **40** 1
PATTERSON, R. G., Mechanism of bias filament rupture in fatigue of nylon, **39** 1382
——, AND R. K. ANDERSON, Fatigue failure in nylon reinforced tires, **38** 832
PATTISON, D. A., see BEERBOWER, A., **37** 246
PATTLE, R. E., see MUSTY, J. W. G., **40** 1166
PAUL, D. R. AND A. T. DIBENEDETTO, Diffusion in amorphous polymers, **39** 1496
PAULSON, R. A., see WOOD, L. A., **33** 1132
PAUTRAT, R., see PINAZZI, C., **36** 282, 1054, 1056
PAVLIKOVA, A. V., see YAKUBCHIK, A. I., **35** 1052
PAVLINEC, I., see LAZAR, M., **36** 527
PAVLINEC, J., see MANASEK, Z., **36** 532
PAVLOV, N. N., E. Y. YAMINSKAYA, AND B. M. KRYMOV, Application of strain gages to the study of (tire) cord at high elongation rates, **32** 907
——, see DOGADKIN, B. A., **36** 262
PAVLOVSKAYA, T. E., see YAKUBCHIK, A. I., **32** 284
PAVLYUCHENKO, G. M., T. V. GATOVSKAYA, AND V. A., KARGIN, Poly(1-butene) chain flexibility from sorption data **36** 1003
PAYNE, A. R., Sinusoidal-strain dynamic testing of rubber products, **36** 422
Dynamic properties of carbon black-loaded rubber vulcanizates. Part I, **36** 432
Part II, **36** 444
Effect of compression on the shear modulus of rubber, **36** 675
Determination of cure time with the curometer, **36** 922
Transmissibility through and wave effects in rubber, **37** 1190
Study of carbon black structures in rubber, **38** 387
Effect of dispersion on dynamic properties of filler-loaded rubbers, **39** 365
Note on conductivity and modulus of carbon black loaded rubbers, **39** 915
——, AND W. F. WATSON, Carbon black structure in rubber, **36** 147
——, see EAGLES, A. E., **31** 673
——, see GROSCH, K., **40** 815
——, see HARWOOD, J. A. C., **39** 814, 1544; **40** 840
PAYNE, J., see DIBBO, A., **36** 911
PEARSON, R. W., see BENNETT, J. V., **38** 94
PECHKOVSKAYA, K. A., L. G. SENATORSKAYA, B. Z. BERMAN, AND B. A. DOGADKIN, Reinforcement of rubber in latex. III. Electron microscope investigation, **36** 156
PECHKOVSKAYA, K., see DOGADKIN, B., **32** 639
PEDEMONTE, E. AND U. BIANCHI, Dilatometric measurement of a transition of *cis*-1,4-polybutadiene, **38** 347
PEDERSON, H. L., Estimation of state of cure with S^{35} **33** 181
PEGORARO, M., see G. NATTA, **39** 1667
PEHU-LEHTONEN, A., see SOININEN, A., **36** 516; **37** 477
PELLON, J. AND K. J. VALAN, Radiation induced block or graft copolymers of methyl methacrylate with isobutylene and ethylene propylene rubbers, **39** 1617
PENNELLS, P. J., see DUNNING, D. J., **40** 1381
PERERA, V., see DEAN, W. R., **31** 446
PERRY, E., see BROWNLEE, J. L., **40** 1147
PERRY, K. P., W. J. JACKSON, JR., AND J. R. CALDWELL, Elastomers based on polycyclic bisphenol polycarbonates, **39** 1008
PETER, J. AND W. HEIDEMANN, New method for determining the vulcanization characteristics of rubber compounds, **31** 105
PETERLI, E., see KUHN, W., **33** 245
PETERLIN, A., see BUROW, S. P., **39** 631
PETICOLAS, W. L., Introduction to the molecular viscoelastic theory of polymers and its applications, **36** 1422
PETREE, M. C., see WARFIELD, R. W., **39** 143
PETTERSON, D. L., see COLE, H. M., **39** 259
PEVZNER, D. M., see DOGADKIN, B. A., **31** 348, 751; **32** 976; **33** 384
——, see EITINGON, I. I., **35** 644
——, see FEL'DSHTEIN, **32** 983
PHILLIPS, J. K., Identification of rubber polymers by mass spectrometry, **36** 794
PIACENTINI, R., see FIORENZA, A., **36** 1119
PIERIE, W. R., see D. A. RAIBLE, **39** 1276

PIERSON, R. M., W. E. GIBBS, G. E. MEYER, F. J. NAPLES, W. M. SALTMAN, R. W. SCHROCK, L. B. TEWKSBURY, AND G. S. TRICK, Adduct rubbers: a versatile family of elastomers, **31** 213
PINAZZI, C., J.-C. DANJARD, AND R. PAUTRAT, Addition of unsaturated monomers to rubber and similar polymers, **36** 282
——, R. PAUTRAT, AND R. CHERITAT, Reaction products of chloral with *cis*-1,4-polyisoprene, **36** 1054
Reaction of chloral with 1,4-polyisoprene, **36** 1056
——, see LEBRAS, J., **31** 664
PINEGIN, V. A., S. A. VASIL'EVA, AND L. M. KEPERSHA, Influence of surface condition, duration of molding, pressure and temperature upon bond strength between components of tire casings, **32** 503
PISARENKO, A. P., see ALBAM, M. A., **33** 1193; **34** 357
——, see SHAPOVALOVA, A. I., **31** 89
——, see SHVETSOV, V. A., **34** 959; **35** 335
——, see VOYUTSKII, **31** 712
PLATT, B., see BARRIE, J. A., **35** 153, 166
PODDUBNYI, I. YA AND E. G. EHRENBURG, Branching in macromolecules of different synthetic rubbers, **31** 699
Branching in butadiene rubber, **34** 975
State of branching in regular polyisoprene, **36** 807
——, see BRESLER, S. E., **33** 669, 689; **34** 986
POHL, H. A., see LUND, J. K., **40** 1492
POLMANTEER, K. E. AND J. D. HELMER, Complexities of crosslink density in filled elastomers, **38** 123
——, J. A. THORNE, AND J. D. HELMER, Shift in T_g by elastomer orientation, **39** 1403
POLVARA, O., see ANGIOLETTI, A., **38** 1115
POPE, A. W., Use of rubber models as a stress aid **37** 199
POPJAK, G., see ARCHER, B. L., **40** 679
POPOV, V. I., see BARAMBOIM, N. K., **36** 803
POPOVA, E. N., see SHATALOV, V. P., **32** 701
POPOVA, Z. V., see BERLIN, A. A., **33** 1188
PORTER, M., Structural characterization of filled vulcanizates. Part I. Determination of the concentration of chemical crosslinks in natural rubber vulcanizates containing high abrasion furnace black, **40** 866
——, see BATEMAN, L., **31** 1055, 1090
——, see MOORE, C. G., **36** 547, 1173
PORTER, R. S. AND J. F. JOHNSON, Polyisobutene degradation in laminar flow: Composition and shear variables, **38** 243
——, see BARRALL, E. M., **39** 1513
POSTOVSKAYA, A. F., M. A. SALIMOV, AND A. S. KUZMINSKII, Changes in polysulfide chain length in sulfur structures of vulcanizates by light, **31** 747
POWERS, P. O., Resins used in rubber (Review), **36** 1542
PRAT, C., Correlation between laboratory abrasion and road testing, **31** 387
PRAT, CL. P., see GEESINK, H. A. O. W., **31** 166
PRATT, O. S., see COUCH, W. H., **32** 1104
PRAVEDNIKOVA, S. I., see ZUEV, Y. S., **32** 278; **35** 411, 437
PREMILAT, S., see DONNET, J.-B., **40** 919
PRESCOTT, W. E., see HENDRICKSON, J. G., **37** 1
PRESTRIDGE, E. B., An electron microscope reinforcement criterion for carbon black masterbatches, **35** 250
PRICE, C., see ALLEN, G., **37** 606
PRICE, L. D., see MARSH, P. A., **40** 359
PRIKLONSKAYA, N. V., Speed of mixing rubber as a factor in processing, **31** 907
PRISS, L. S., see ANIKANOVA, K. F., **31** 30
PROVOROV, V. N., see KHERASKOVA, E. P., **35** 498
PRUZHANSKAYA, N. A., see BUIKO, G. N., **33** 556
PRZHEBYLSKII, M. I., see BLOKH, G. A., **33** 1015
PUETT, D., see SMITH, K. J., **39** 1436
PUKHOV, A. P., see MALKINA, K. E., **32** 513
PURLOVA, V. S., see YAKUBCHIK, A. I., **35** 1060

RABINOVITCH, D. I., see SPASSKOVA, A. I., **34** 211
RAE, J. A., see BANKS, S. A., **38** 158
RAEVSKII, V. G. AND S. S. VOYUTSKII, Influence of vulcanization on adhesion to nonvulcanizing polymers, **34** 879
——, S. S. VOYUTSKII, I. V. LIVANOVA, AND Z. D. SHTEINBERG, Elastomer structure and adhesion. I. Effect of sulfur vulcanization on the adhesion of rubber to fiber forming compounds, **35** 1041
II. Effect of sidechain double bonds, **35** 1047
RAIBLE, D. A., D. P. KELLER, W. R. PIERIE, AND S. KOORAJIAN, Elastomers for use in heart valves, **39** 1276
RAILSBACK, H. E., W. T. COOPER, AND N. A. STUMPE, *Cis*-polybutadiene natural rubber blends, **32** 308
RAKOVA, G. V. AND A. A. KOROTKOV, The copolymerization of isoprene and 1,3-butadiene by butyllithium, **33** 623
——, see KOROTKOV, A. A., **34** 991
RAMAN, N. K., see BARRER, R. M., **36** 642, 651
RAPP, N. S., see INGHAM, J. D., Mechanism of thermal degradation of certain polyether polyurethans, **40** 1212
RATNER, S. B., The abrasion of vulcanized rubber against wire gauze, **32** 471
——, AND N. V. MELNIKOVA, Abrasion of rubber against abrasive paper, **32** 1199
RAUSCH, K. W., R. F. MARTEL, AND A. A. R. SAYIGH, Structure-property relationships in one-step urea-urethan elastomers, **38** 140
RAZIKOV, K. K. AND G. S. MARKOVA, Preparation of ultrathin sections of polymeric materials, **36** 799
RAZUMOVSKAYA, I. V., see BARTENEV, G. M., **35** 178
REBINDER, P. A., see YAMPOLSKII, B. Y., **35** 877
REDETZKY, W., see SCHEELE, W., **33** 834
REGENASS, F. A., see SEMON, W. L., **31** 847

REHAGE, G., Thermodynamics of swelling. I. Thermodynamic properties of crosslinked binary systems, **39** 651
REHNER, J., JR., Proposed method for estimating polymer molecular weight distribution without fractionation, **34** 453
Whither RUBBER REVIEWS? **39**(1)xxxiii
——, see SERNIUK, G. E., **39** 1105
——, see WANLESS, G. G., **35** 118
——, see WEI, P. E., **35** 133, 1091; **39** 1094
REIKH, V. N., see DOLGOPLOSK, B. A., **32** 321
——, see TINYAKOVA, E. I., **32** 220, 231
——, see YAKUBCHIK, A. I., **35** 1052
REILLY, P. J., see GEHMAN, S. D., **40** 969
REISSINGER, S., see FROMANDI, G., **32** 295
REITLINGER, S. A., see KUZMINSKII, A. S., **35** 147
REKASHEVA, A. F., see BLOKH, G. A., **33** 1015
RELYEA, D. I., see TAWNEY, P. O., **38** 352
RETTING, W., Fracture of high polymers, **40** 1036
REYNOLDS, R. J., see DAVISON, S., **38** 457, 475
REZNIKOWSKII, M. M., Determination of static and dynamic bond strength between vulcanizates, **33** 581
——, see ANIKANOVA, K. F., **31** 30
REZTSOVA, E. V., G. V. CHUBAROVA, AND G. L. SLONIMSKII, Mechanochemical effects in fatigue of rubber, **38** 657
——, B. G. KIPKINA, AND G. L. SLONIMSKII, Mechanochemical phenomena in polymers. II. The effects of initiators and inhibitors of chain processes, **33** 946; **36** 480
——, see SLONIMSKII, G. L., **33** 457, 959; **36** 473
RIBAILLIER, D., T. C. CUONG, AND P. FOURNIER, Influence of regeneration of reduced triphosphopyridine nucleotide (TPN) on formation of *cis*-polyisoprene in *hevea brasiliensis*, **38** 450
RICHARDSON, M. J., Direct observation of polymer molecules and determination of their molecular weight, **39** 567
RIGBY, J. D., see HALL, G. L., **38** 782
RING, W. AND H. J. CANTOW, Investigations of molecular weight "jump" reactions in polybutadienes, **40** 895
RINKE, H., Elastomeric fibers based on polyurethans, **36** 719
RITTER, F. J., Low temperature properties of natural rubber as affected by reaction with thio acids, **33** 1
RIVERA, M., Elastomers in space and in other high vacuum environments, **39** 1127
RIVIN, D., Use of lithium aluminum hydride in the study of surface chemistry of carbon black, **36** 729
ROBB, J. C., see LEEMING, P. A., **39** 1390
ROBBINS, R. F., Y. OHORI, AND D. H. WEITZEL, Linear thermal expansion of elastomers in the range 300° to 76° K, **37** 154
ROBERTS, D. E. AND L. MANDELKERN, Some properties of polymer networks formed from oriented chains of natural rubber, **31** 469
ROBERTS, R. C., see GEE, G., **40** 1159
ROBINSON, A. R., J. V. MARRA, AND L. O. AMBERG, Ethylene-propylene rubber vulcanization with aralkyl peroxide coagents, **35** 1083
ROBISON, S. B., see BUCKLEY, D. J., **32** 257
ROE, R.-J. AND W. R. KRIGBAUM, Contribution of internal energy to the elastic force of natural rubber, **36** 351
——, see KRIGBAUM, W. R., **38** 1039
ROGAN, J. B., see CLUFF, E. F., **34** 639
ROGERS, C. E., see TOBOLSKY, A. V., **33** 652, 655
ROGERS, T. H., JR., E. A. Murphy, biographical note, **39**(3)lxxxv
ROHALL, P., see GEHMAN, S. D., **34** 506
ROHDE, E., see SCHEELE, W., **30** 768
ROLLMANN, K. W., see GRUVER, J. T., **38** 636
——, see KRAUS, G., **38** 493; **39** 1530; **40** 1305
RONAY, M., Nonhomogeneous straining and fracture mechanism in a filled elastomer, **38** 248
ROSENBAUM, R., see FOLKMAN, J., **40** 928
ROSS, G. W., Kinetics of the reaction of sulfur with cyclohexene and other olefins, **31** 1077
——, see BATEMAN, L., **31** 1055
ROSS, J. A., see DEVINE, F. E., **37** 491
——, see SHARP, T. J., **35** 726
ROSSMAN, R. P., see BOLT, T. D., **34** 1141
ROTH, F. L., G. W. BULLMAN, AND L. A. WOOD, Compliance, time, temperature relationships from indentation measurements on a pure-gum rubber vulcanizate, **39** 397
——, AND R. D. STIEHLER, Standard materials for rubber compounding, **34** 798
——, see MANDEL, J., **33** 502
——, see STIEHLER, R. D., **36** 82
——, see WOOD, L. A., **36** 611
ROUSSEL, P. A., see SELIGMAN, K. L., **34** 869
ROWZEE, E. R., International horizons in synthetic rubber, **36**(2)xxvi
RUDAKOV, A. P. AND E. V. KUVSHINSKII, Mechanism of abrasion of vulcanized rubber, **37** 291
RUPAR, W. AND J. M. MITCHELL, A study of synthetic rubber latexes by the electron microscope, **35** 1028
RUSCH, K. C., see GENT, A. N., **39** 389
RUSSELL, R., D. A. SMITH, AND G. N. WELDING, Kinetics of thiazole accelerated sulfur vulcanization of natural rubber, **36** 835; **37** 583
Estimation, from swelling, of the structural contribution of chemical reactions to the vulcanization of natural rubber. Part III. Restricted method, **37** 576

SABEY, B. E., Friction between conical and spherical shaped sliders and wet rubber, **33** 119
Road surface characteristics and skidding resistance, **40** 684
——, AND G. N. LUPTON, Friction on wet surfaces of tire-tread-type vulcanizates, **37** 878
——, see GILES, C. G., **33** 151; **38** 840
SADRON, C., see GALLOT, B., **40** 932

SALCEDO, F. S., see BILLS, K. W., JR., **35** 284
SALIMOV, M. A., Changes in polybutadiene rubber under various conditions of aging, **36** 747
——, see POSTOVSKAYA, A. F., **31** 747
SALTMAN, W. M., see PIERSON, R. M., **31** 213
SALYER, I. O., see BELLANCA, C. L., **39** 1215
SAMINSKII, E. M., see BRESLER, S. E., **33** 462, 469; **34** 318
SAMOLETOVA, V. V., see SUBBOTIN, S. A., **31** 44
——, see VOTINOV, M. P., **33** 988
SAMSONOVA, N. G., see DOGADKIN, B. A., **31** 569
SANFIROVA, T. P., see ZHURKOV, C. N., **35** 813
SAPOZHKOVA, L., see DOGADKIN, B., **32** 184
SAPPER, D. I., see BAHARY, W. S., **40** 1529
——, see WU, R. T., **38** 730
SARGENT, D. T., see STAFFORD, W. E., **31** 202
SARTORI, G., A. VALVASSORI, AND S. FAINA, Ethylene propylene dicyclopentadiene terpolymerization, **38** 620
——, see NATTA, G., **36** 988, 1583
SATAS, D., Porous sprayed sheets and coatings, **40** 1296
SATO, Y. AND J. FURUKAWA, A molecular theory of filler reinforcement based on the concept of internal deformation, **35** 857; **36** 1081
SAUNDERS, J. H., Reactions of isocyanates and isocyanate derivatives at elevated temperatures, **32** 337
Relations between polymer structure and properties in urethans, **33** 1259
Formation of urethan foams, **33** 1293
——, AND J. K. BACKUS, Thermal degradation and flammability of urethan polymers, **39** 461
——, see STEINGISER, S., **37** 38
SAVILLE, B. AND A. A. WATSON, Structural characterization of sulfur vulcanized natural rubber networks, **40** 100
——, see BELL, C. L. M., **39** 1565
——, see MOORE, C. G., **34** 795
SAVILLE, R. W., Reactions of amines and sulfur with olefins. IV. The chemical and thermal decompositions of N,N'-thiobisamines and their reactions with olefins, **32** 577
——, see BATEMAN, L., **31** 1055
SAVKOOR, A. R., Friction of rubber, **39** 306
SAXENA, K. K. AND S. BANERJEE, Compounding of styrene-butadiene rubber with shellac, **36** 561
II. **38** 212
SAYIGH, A. A. R., see RAUSCH, K. W., **38** 140
SAYLES, D. C., Applications of elastomers in solid rocket powerplants, **39** 112
SAZHIN, B. I., see MIKHAILOV, G. P., **33** 741
SCANLAN, J., Effect of network flaws on the elastic properties of vulcanizates, **34** 141
Swelling of vulcanized rubbers in binary solvent mixtures, **38** 940
——, AND W. F. WATSON, Statistical treatments of rubber structure, **33** 1201
——, see DUNN, J. R., **32** 739; **33** 423, 433
——, see LEE, D. F., **36** 1005
——, see MAISEY, L. J. **38** 375
——, see MOORE, C. G., **34** 309
SCHAFFLING, O. T., see SCHROEDER, H., **39** 1184
SCHAFFNER, I. J., see AUER, E. E., **31** 185
SCHALLAMACH, A., Friction and abrasion of rubber, **31** 982
Role of hysteresis in tire wear and laboratory abrasion, **33** 857
Theory of dynamic rubber friction, **39** 320
——, D. B. SELLEN, AND H. W. GREENSMITH, Dynamic behavior of rubber during moderate extensions, **39** 328
——, see GROSCH, K. A., **35** 1342; **39** 287
SCHAY, G. AND P. SZOR, Stress-strain relation in rubber blocks under compression. I., **32** 409
SCHEELE, W., Kinetics studies of the vulcanization of natural and synthetic rubbers, **34** 1306
Forms of combination of sulfur in vulcanization of rubber, **40** 849
——, AND K. BRIGHAN, Vulcanization of elastomers. 16. The vulcanization of natural rubber with sulfur in the presence of dithiocarbamates I, **31** 301
——, AND M. CHERUBIM, XV. The vulcanization of natural and synthetic rubber with sulfur in presence of organic bases I, **31** 286
30. Kinetics of the decrease of sulfur concentration during vulcanization, **34** 606
—— AND A. FRANCK, 20. Sulfur vulcanization accelerated with thiuram compounds. I., **32** 139
——, H. GRASEMANN, AND G. MAU, 17. The role of the oxide in vulcanization with thiuram compounds. II., **31** 315
————, AND P. STRANGE, 19. The function of oxides in thiuram vulcanization, **32** 150
—— AND J. HELBERG, 40. Vulcanization of natural rubber and synthetic rubber with sulfur in presence of sulfenamides. III., **38** 189
—— AND K.-H. HILLMER, 23. The chemical kinetics of vulcanization reactions and the physical properties of the vulcanizates. I., **33** 335
46. The kinetics of crosslinking, **37** 698
Degradation of elastomers. 4. Continuous chemical stress relaxation of natural rubber vulcanizates, **39** 1640
—— AND K. HUMMEL, Vulcanization of elastomers. 21. Vulcanization of natural rubber with thiuram disulfides. VI., **32** 566
—— AND G. KERRUTT, 39. Vulcanization of natural and synthetic rubbers by sulfur and sulfenamides. II., **38** 176
——, G. MAU, AND G. KEMME, 24. The effect of fillers on the course of vulcanization reactions. I. **33** 326
——, H. MULLER, AND W. SCHULZE, 36. Vulcanization of natural rubber and synthetic rubbers with sulfur in absence of accelerators. II., **37** 910
—— AND W. REDETZKY, 26. Vulcanization of natural and synthetic rubbers by sulfur in the presence of organic bases, **33** 834

—— AND E. ROHDE, 47. Vulcanization of natural rubber and polybutadiene with benzoyl peroxide, **39** 768
——, W. SCHULZE, AND K.-H. HILLMER, 38. The reactivity of synthetic rubbers. I. **36** 236
—— AND H. D. STEMMER, 22. Thermal vulcanization of synthetic rubbers. I., **32** 962
—— AND W. TRIEBEL, Kinetics of the reaction of organic sulfides with methyl iodide. I., **32** 208
—— AND H.-E. TOUSSAINT, Vulcanization of elastomers. 12. Perbunan with thiuram monosulfide and sulfur. I., **32** 128
——, H.-E. TOUSSAINT, AND Y.-K. CHAI, 25. Natural rubber and synthetic elastomers with sulfur and sulfenamides. I. **33** 846
——, H.-E. TOUSSAINT, AND P. STRANGE, 14. Role of the oxide in vulcanization with compounds of the thiuram series, I., **31** 539
——, see ECHTE, E., **33** 1051
——, see HILLMER, K.-H., **32** 759
SCHLIEBENER, C., see PATAT, F., **39** 36
SCHMALZ, E. O., see KIMMER, W., **33** 639
SCHMIDT, E. AND P. H. BIDDISON, Determination of latex particle size distributions by fractional creaming with sodium alginate, **34** 1228
SCHMIEDER, K., see HEINZE, H. D., **35** 776
SCHNEIDER, W. C., see CHINAI, S. N., **40** 522
SCHNELL, G., see HEINZE, H. D., **35** 776
SCHOENBECK, M. A., A new hydrocarbon elastomer. III. Compounding with fillers and plasticizers, **35** 1142
SCHOENBERG, E., D. L. CHALFANT, AND R. H. MAYOR, Preformed aluminum triisobutyl, titanium tetrachloride catalysts for isoprene polymerization, **37** 103
SCHOLLENBERGER, C. S., H. SCOTT, AND G. R. MOORE, Polyurethan VC, a virtually crosslinked elastomer, **35** 742
SCHOON, TH. G. F., see KIVEK, H., Electron microscope investigation of states of distribution in elastomer blends, **40** 1238
SCHROCK, R. W., see PIERSON, R. M., **31** 213
SCHRODER, E., Analytical chemistry of plastics. XIX. Analysis of rubberlike mixed polyurethans, **37** 146
SCHROEDER, H., O. T. SCHAFFLING, T. B. LARCHAR, F. F. FRULLA, AND T. L. HEYING, Poly-*m*-carboranesiloxanes as thermoresistant elastomers, **39** 1184
SCHROYER, L. O., see JUVE, A. E., **37** 434
SCHULZ, G. V. AND A. MULA, Size, form, and flexibility of the rubber molecule, **35** 908
SCHULZE, W., see SCHEELE, W., **36** 236; **37** 910
SCHUUR, G., Nature of the particle surface in hevea latex and pastes of rubber hydrochloride and polyvinyl chloride, **31** 436
SCOTT, C. E. AND F. J. ECKERT, Solution masterbatching studies, **39** 553
SCOTT, C. E., see HESS, W. M., **40** 371
SCOTT, H., see SCHOLLENBERGER, C. S., **35** 742
SCOTT, J. R. AND A. L. SODEN, Microhardness testing, its possibilities and limitations, **33** 876
SCOTT, K. W., Introduction to papers on polymer blends, **40** 323
——, see LAL, J., **39** 881
SCOVILLE, W. E., JR., see BOOR, L., **33** 1114
SEARS, D. S., see NEWTON, E. B., **34** 1
SEELEY, R. D. AND G. W. DYCKES, Determination of effective crosslink density in silicone rubber, **38** 924
SEKHAR, B. C., Aeration of natural rubber latex. I. Effect of polyamines on the hardness and aging characteristics of aerated latex rubber, **31** 425
II. Graft polymerization of vinyl monomers with aerated latex rubber, **31** 430
Inhibition of hardening in natural rubber, **35** 889
——, see BATEMAN, L., **39** 1608
SELIGMAN, K. L. AND P. A. ROUSSEL, Stabilization of neoprene. II. Protection of neoprene vulcanizates against heat aging, **34** 869
SELIGMAN, K. L., see BECKER, R. O., **34** 856
SELLEN, D. B., see SCHALLAMACH, A., **39** 328
SELLERS, J. W., M. P. WAGNER, B. J. DE WITT, C. C. STUEBER, AND J. B. BACHMANN, Peroxide and radiation cured compounds filled with reinforcing fine particle silica, **34** 729
——, see BACHMANN, J. H., **32** 1286
——, see LANING, S. H., **33** 890
SEMON, W. L., DAVID CRAIG, R. B. FOWLER, F. A. REGENASS, HAROLD TUCKER, JOHN A. YANKO, J. J. SHIPMAN, AND R. F. BELT, Perdeuterio SN rubber, **31** 847
SENATORSKAYA, L. G., see DOGADKIN, B. A., **31** 655
——, see PECHKOVSKAYA, K. A., **36** 156
——, see TARASOVA, Z. N., **38** 661, 666
SERGE, A. L., see NATTA, G., **40** 400
SERNIUK, G. E., P. E. WEI, AND J. REHNER, JR., New vulcanizing agents for ethylene propylene elastomers IV. **39** 1105
——, see WEI, P. E., **39** 1094
SEVERINI, F., see NATTA, G., **39** 1667
SHADRICHEVA, T. A., see ZAKHAROV, N. D., **36** 575
SHAPOVALOVA, A. I., S. S. VOYUTSKII, AND A. P. PISARENKO, Adhesion of high polymers. 2. A method for determination of the mutual adhesion of high polymers, **31** 89
——, see VOYUTSKII, S. S., **31** 712
SHARMA, M. G., Failure of polymeric materials under biaxial stress fields, **40** 710
SHARP, T. J. AND J. A. ROSS, Nitrile rubber, polyvinylchloride blends, **35** 726
SHATALOV, V. P., T. V. BASHKATOV, N. KOSTIUKOV, E. N. POPOVA, T. A. CHULIUKOVA, AND M. K. G. KRYGINA, Oil extended styrene butadiene rubber SKS-30M, **32** 701
SHEEHAN, C. J. AND A. L. BISIO, Polymer, solvent interaction parameters, **39** 149
SHEEHAN, W., see GREEN, J., **39** 1222
SHELBERG, W. E. AND L. H. GEVANTMAN, X-ray diffraction comparison of radiation damage in rubber, **34** 250
SHELTON, J. R., Aging and oxidation of elastomers, **30** 1251
—— AND L.-H. LEE, Structure of cyclized polybutadiene, **31** 415

SHELTON, J. R. AND E. T. McDONEL, Investigation of radical and polar mechanisms in vulcanization reactions, **33** 342
SHERSHNEV, V. A., see BRESLER, S. E., **34** 318
——, see DOGADKIN, B. A., **33** 398, 401, 412, 1068; **35** 1
SHETEYN, E. B., see ANIKANOVA, K. F., **31** 30
SHEVCHENKO, Y. G., see BLOKH, G. A., **37** 714
SHIBAYAMA, K. AND Y. SUZUKI, Viscoelastic properties of multiple network polymers. IV. Copolymers of styrene and divinylbenzene, **40** 476
SHIMOZATO, J. AND K. URA, A study of vulcanization accelerators. I. Compounds which react analogously to rubber, **31** 211
SHIPMAN, J. J. AND M. A. GOLUB, Reaction of deuterio polyisoprene and deuterio polybutadiene with sulfur, **36** 219
——, see SEMON, W. L., **31** 847
SHORT, J. N., G. KRAUS, R. P. ZELINSKI, AND F. E. NAYLOR, Polybutadienes of controlled *cis*, *trans* and vinyl structures, **32** 614
SHOTTAFER, J. E., see BOENIG, H. V., **39** 974
SHTARKH, B. V., see SHVETSOV, V. A., **35** 335
SHTEINBERG, Z. D., see RAEVSKII, V. G., **35** 1041
SHU-TSIU, U., see YAMPOLSKII, B. Y., **35** 877
SHVARTS, A. G., Evaluation of rubber-solvent interaction, **31** 691
SHVETSOV, V. A., A. S. NOVIKOV, AND A. P. PISARENKO, Structure of filled NBR vulcanizates by the stretching method (Mullins effect), **34** 959
——, A. P. PISARENKO, B. V. SHTARKH, AND A. S. NOVIKOV, An electron microscope study of filler-rubber mixtures, **35** 335
SIDOROVICH, A. V. AND E. V. KUVSHINSKII, Thermomechanical studies of amorphous and crystalline polymers, **37** 355
——, see FOMENKO, B. A., **37** 365
SIDOROVICH, E. A., see KUVSHINSKII, E. V., **32** 662
——, see MAREI, A. I., **40** 517
SIERON, J. K., High temperature elastomers for extreme aerospace environments, **39** 1141
SIMONAZZI, T., see BUCCI, G., **38** 334
SIMS, D., see ALLEN, G., **36** 1000
SINGH, A. AND L. WEISSBEIN, Kinetics of urethan cleavage in crosslinked polyurethans, **40** 1230
SIRCAR, A. K., see BHAUMIK, M. L., **36** 1059
——, see CHATTERJEE, P. K., **35** 665, 671
SKEWIS, J. D., Measurement of rubber tack, **38** 689
Self-diffusion coefficients and tack of some rubbery polymers, **39** 217
SKORODUMOVA, Z., see DOGADKIN, B., **31** 361
SLADKEVICH, E. G., see DOLGOPLOSK, B. A., **32** 328
SLICHTER, W. P., Nuclear magnetic resonance studies of elastomers, **34** 1574
——, AND D. D. DAVIS, Nuclear magnetic resonance studies of molecular motion in natural rubber, **36** 318; **38** 517
SLIEMMERS, F. A., B. BENNETT, P. B. STICKNEY, AND R. G. HEILIGMANN, Factors influencing the stability of SBR latex, **33** 535
SLJAKA, V. A., see COLE, H. M., **39** 259
SLOBODIN, YA. M., V. E. MAYOROVA, AND A. M. SMIRNOVA, Thermal degradation of ethylene propylene rubber. C_2-C_8 hydrocarbons as thermal decomposition products of SKEP, **38** 674
SLONIMSKII, G. L., Mutual solubility of polymers and properties of mixtures, **32** 87
Status of the theory of bond strength in multiply articles, **33** 306
——, V. A. KARGIN, AND E. V. REZTSOVA, Mechanochemical phenomena in polymers. IV. Modification of raw and vulcanized rubbers, **33** 959
——, AND N. F. KOMSKAYA, Mutual solubility of polymers. II. The viscosity of mixed rubbers and the behavior of solutions of these, **31** 244
——, AND G. P. DRUGOVA, Mechanochemical phenomena in polymers. III. Strength of the bond between elements of multiply polymer articles, **33** 953
——, AND E. V. REZTSOVA, The mutual solubility of polymers. V. Mechanochemical blending, **33** 457
Mechanochemical phenomena. I. Chemical flow in raw and vulcanized rubber, **36** 473
——, AND G. V. STRUMINSKII, The mutual solubility of polymers. IV. The effect of the packing density of polymer molecules on their mutual solubility, **31** 257
——, see GENGRINOVICH, B. I., **32** 673
——, see KOMSKAYA, N. F., **31** 49
——, see REZTSOVA, E. V., **33** 946; **36** 480; **38** 657
——, see SOGOLOVA, T. I., **37** 627
——, see STRUMINSKII, G. V., **31** 250
——, see TSYDZIK, M. A., **33** 42
SMALL, R. M. B., see HENDERSON, J. F., **38** 817
SMIRNOVA, A. M., see SLOBODIN, YA. M., **38** 674
SMIRNOVA, G. E., see TRAPEZNIKOVA, O. N., **32** 463
SMITH, D. A., Characterization of polymer decomposition in an inert atmosphere by thermogravimetry, **37** 937
Modification of a thermogravimetric balance for pyrolysis in a controlled atmosphere, **37** 934
——, see DUDLEY, M. A., **40** 445
——, see RUSSELL, R., **36** 835; **37** 576, 583
SMITH, D. E., see MARTEL, R. F., **34** 658; **35** 141
SMITH, D. S., see COLE, H. M., **39** 259
SMITH, F. B., Response of elastomers to high temperature cure, **34** 571
SMITH, K. J., JR., A GREENE, AND A. CIFERRI, Crystallization under stress and non-gaussian behavior of macromolecular networks, **39** 685
—— AND D. PUETT, Stress optical behavior of rubber networks at large deformations, **39** 1436
——, see GREENE, A., **40** 650
SMITH, P. J. A., see MUSTY, J. W. G., **40** 1166
SMITH, R. K., see COOPER, W., **40** 1553

SMITH, R. W., Vacuole formation and the Mullins effect in SBR blends with polybutadiene, **40** 350
——, AND A. L. BLACK, Service-induced diffusion and nodule formation in rubber stocks, **37** 338
SMITH, T. L., Dependence of the ultimate properties of a SBR rubber on strain rate and temperature, **32** 992
Volume changes and dewetting in glass bead-polyvinyl chloride elastomeric composites under large deformations, **34** 123
Nonlinear viscoelastic response of amorphous elastomers to constant strain rates, **36** 682
I. Characterization by a time and temperature independent failure envelope, **37** 777
II. Comparison of failure envelopes for unfilled vulcanizates, **37** 792
III. Dependence of the failure envelope on crosslink density, **40** 544
——, AND J. E. FREDERICK, Ultimate tensile properties of elastomers. IV. Dependence of the failure envelope, maximum extensibility, and equilibrium stress strain curve on network characteristics, **40** 694
——, AND A. B. MAGNUSSON, Diisocyanate-linked polymers. II. Mechanical and swelling properties of some polyurethane elastomers, **33** 1092
III. Relationships between the composition and ultimate tensile properties of some polyurethane elastomers, **35** 753
——, AND P. J. STEDRY, Time and temperature dependence of the ultimate propetries of an SBR rubber at constant elongations, **34** 897
——, see LANDEL, R. F., **35** 291
SMITH, W. A. AND J. M. WILLIS, Diene rubber: compounding and testing, **34** 176
——, see ADAMS, H. E., **31** 838
SNISARENKO, A. M., see TARASOVA, Z. N., **38** 666
SNOWDON, J. C., Choice of resilient materials for anti-vibration mountings, **32** 1209
Dynamic properties of rubberlike materials and the isolation of mechanical vibration, **34** 148
Isolation from vibration with a mounting utilizing low- and high-damping rubberlike materials, **35** 798
Representation of the mechanical damping possessed by rubberlike materials and structures, **37** 370
Occurrence of wave effects in rubber antivibration mountings, **39** 740
SNYDER, C. E. AND D. S. WEIR, Controlled instability of polymers for grid-type satellites, **39** 1161
SODEN, A. L., see HUGHES, B. G., **36** 875
SODEN, A. L., see SCOTT, J. R., **33** 876
SOGOLOVA, T. I., G. L. SLONIMSKII, AND V. A. KARGIN, Viscous flow and flow temperature of polymers, **37** 627
——, see KARGIN, V. A., **36** 111
SOININEN, A., W. BASK, AND A.-L. PEHU-LEHTONEN, Effect of piperidine on rubber solutions, **37** 477
——, A. PEHU-LEHTONON, AND E. AUTERINEN, Atmospheric ozone in Helsinki and its effects on rubber, **36** 516
SONNENBERG, S., see ECHTE, E., **33** 1051
SOUTHERN, E. AND A. G. THOMAS, An oscillating blade microtome for rubber, **36** 514
SPACHT, R. B., Best paper committee, **39**(4)cxviii
——, W. S. HOLLINGSHEAD, H. L. BULLARD, AND D. C. WILLS, Volatility of antioxidants and antiozonants. I. Pure compounds in absence of rubber, **37** 210
II. Effect on rubber testing, **38** 134
SPASSKOVA, A. I. AND D. I. RABINOVITCH, Structure of the spongy polymer of isoprene, **34** 211
——, see YAKUBCHIK, A. I., **34** 200
SPOTT, G., see F. PATAT, **39** 1411
STAFFIN, G. D., see BEERBOWER, A., **37** 246
STAFFORD, W. E., J. B. ALLCROFT, AND D. T. SARGENT, Contributions to the mechanism of devulcanization. II., **31** 202
——, AND R. A. WRIGHT, Modern theories of rubber reclaiming, **31** 599
STANGE, P., see SCHEELE, W., **31** 539; **32** 150
STARMER, P. H. AND C. H. LUFTER, Swelling effect of liquids on NBR (nitrile rubber), **34** 964; **35** 257
STAROBINETS, G. L., Sorption of binary solutions by vulcanizates of natural and synthetic rubber. I. Isotherms of effective sorption, **32** 77
STAVELY, F. W., P. H. BIDDISON, M. J. FORSTER, H. G. DAWSON, AND J. J. BINDER, Structure of various natural rubbers, **34** 423
STEARNS, C. A., see TRIVISONNO, N. M., **35** 937
STEARNS, R. S. AND L. E. FORMAN, Stereoregular polymerization of isoprene with lithium and organolithium compounds, **33** 595
——, see ADAMS, H. E., **31** 838
STEDRY, P. J., see LANDEL, R. F., **34** 884
——, see SMITH, T. L., **34** 897
STEEL, M. N., see MANDEL, J., **33** 502
STEIN, R. S., see YAU, W., **38** 58
STEINGISER, S., W. C. DARR, AND J. H. SAUNDERS, Permanence properties of flexible urethan foams, **37** 38
STEMMER, H. D., see SCHEELE, W., **32** 962
STEVENS, J. R. AND D. G. IVEY, Mechanical behavior of a polymer at temperatures through the glass transition temperature, **32** 434
STEWART, J. E., see LINNIG, F. J., **31** 719
STEWART, R. A., see ANGOVE, S. N., **39** 755
STICKNEY, P. B. AND R. D. FALB, Carbon black-rubber interactions and bound rubber, **37** 1299
——, E. E. MCSWEENEY, W. J. MUELLER, AND S. T. PALINCHAK, Bound-rubber formation in diene polymer stocks, **31** 369
——, see KELL, R. M., **31** 499
——, see MUELLER, W. J., **37** 990
——, see PALINCHAK, S. T., **31** 374
——, see SLIEMERS, F. A., **33** 535
STIEHLER, R. D. AND F. L. ROTH, Comparison of standard and microtests for international rubber hardness, **36** 82
——, see LINNIG, F. J., **39** 1041
——, see MANDEL, J., **33** 502
——, see ROTH, F. L., **34** 798

STOREY, E. B., Oil-extended rubbers, **34** 1402
——, see BRIGGS, G. J., **36** 621; **37** 128
——, see GELINAS, L. P., **35** 339
STRAUS, S. AND S. L. MADORSKY, Thermal degradation of polyacrylonitrile, polybutadiene, and copolymers of butadiene with acrylonitrile and styrene, **32** 748
STRELLA, S., see NEWMAN, S., **39** 1019
STREL'NIKOVA, N. P., see FELDSHTEIN, M. S., **32** 983
STRUMINSKII, G. V. AND G. L. SLONIMSKII, Mutual solubility of polymers. III. Heats of mixing of polymers, **31** 250
——, see SLONIMSKII, G. L., **31** 257
STUDEBAKER, M. L., Chemistry of carbon black and reinforcement, **30** 1400
Changes in polysulfide content during road tests of SBR tires, **39** 1526
Effect of curing systems on selected physical properties of natural rubber vulcanizates, **39** 1359
——, AND L. G. NABORS, Sulfur group analyses in natural rubber vulcanizates, **32** 941; 1676
Benzothiazyl disulfide-accelerated vulcanization of carbon black loaded natural rubber, **36** 863
Determination of carbon black particle size by reflectance, **40** 1319
——, see DOLLINGER, R. E., **40** 1311
——, see NABORS, L. G., **40** 1323
STUEBER, C. C., see SELLERS, J. W., **34** 729
STUMPE, N. A., see RAILSBACK, H. E., **32** 308
STYRAN, Z. E., see BARTENEV, G. M., **33** 1166
SUBBOTIN, S. A., V. V. SAMOLETOVA, AND A. K. ZNAMENSKAYA, SKI rubber, a new polyisoprene, **31** 44
——, see VOTINOV, M. P., **33** 988
SUITO, E. AND M. ARAKAWA, Infrared studies of the rubber-filler system. I. Infrared absorption spectra of inorganic fillers, **38** 219
II. Identification of rubbers compounded with fillers by infrared absorption spectra, **38** 227
SULIMOV, V. S., see YAKUBCHIK, A. I., **35** 1063
SULLIVAN, A. B., see WISE, R. W., **35** 684
SULLIVAN, F. A. V. AND A. R. DAVIS, A method of screening antiozonants, **33** 899
SULZHENKO, L. L., see VOTINOV, M. P., **32** 1020
SUSLYAKOV, A. V., see DOGADKIN, B. A., **31** 655
SUZUKI, K., see IWAKURA, Y., **33** 416
SUZUKI, YASUKIRA, see SHIBAYAMA, K., **40** 376
SVETLIK, J. F., see CONANT, F. S., **31** 562
SWEELY, J. S., see FERRIS, S. W., **32** 379
SWEITZER, C. W., K. A. BURGESS, AND F. LYON, Chemistry of carbon black in rubber reinforcement, **34** 709
SWIFT, P. M., Bulk polymerization in natural rubber swollen by methyl methacrylate, **32** 799
——, see GROSCH, K. A., **39** 1656
——, see MOORE, C. G., **35** 105
SZOR, P., see SCHAY, G., **32** 409
SZUKIEWICZ, W., see BERGER, S. E., **38** 150

TABOR, D., Hysteresis losses in the friction of lubricated rubber, **33** 142
——, see GREENWOOD, J. A., **33** 129
TAKAHASHI, M., see TOBOLSKY, A. V., **37** 285; **39** 524, 1030
TAKENAKA, TOHRU, see GOTOH, R., **40** 663
TALALAY, L., Agglomeration and reinforcement of synthetic latexes by freezing, **36** 581
TAMASHEVSKII, E. E., see ZHURKOV, C. N., **35** 813
TAMM, K., see NAAKE, H. J., **32** 21
TANAKA, T. AND T. YOKOYAMA, Relation between structure and physical properties in polyurethans, **35** 970
TANEJA, H. L. AND S. BANERJEE, Studies on the kinetics of vulcanization of rubber, **37** 557
TANGORRA, G., New indentor hysteresimeter, **34** 347
Indenter hysteresimeter for testing dynamic properties, **36** 1107
Pressures and flow rates in extruders with axially-variable geometry, **39** 418
Hardness, modulus, and thickness, **39** 1520
TARASOVA, Z. N. AND B. A. DOGADKIN, Thermal stress relaxation of vulcanizates of various structures, **39** 1625
——, I. I. EITINGON, L. G. SENATORSKAYA, T. V. FEDOROVA, AND B. A. DOGADKIN, Phenothiazine as an antifatigue agent for natural rubber, synthetic polyisoprene and SBR, **38** 661
——, I. I. EITINGTON, L. G. SENATORSKAYA, T. V. FEDOROVA, A. M. SNISARENKO, G. I. ANDRONOVA, AND B. A. DOGADKIN, Effect of thio derivatives of amines and phenols on the behavior toward thermomechanical treatment and on fatigue of vulcanizates, **38** 666
——, see DOGADKIN, B., **31** 361; **32** 785
TARKOWSKI, H. L., see VANDERHOFF, J. W., Theoretical consideration of interfacial forces involved in coalescence of latex particles, **40** 1246
TAUBMAN, A. B., S. N. TOLSTAYA, V. N. BORODINA, AND S. S. MIKHAILOVA, Adsorption modification of fillers and structure formation in solutions of polymers, **36** 143
TAWNEY, P. O., J. R. LITTLE, AND P. VIOHL, Vulcanizaiton of butyl rubber with phenol formaldehyde derivatives, **33** 229
——, W. J WENISCH, S. VAN DER BURG, AND D. I. RELYEA, Vulcanization with maleimides, **38** 352
TAYLOR, C. E., Diaphragm vulcanized adhesion test method, **38** 791
TAYLOR, G. L., see BOONSTRA, B. B., **38** 943
TAYLOR, W. D., see BOOTH, C., **38** 325
TEITELBAUM, B. YA. AND N. P. ANOSHINA, Thermographic study of elastomers. III. Peculiarities of crystallization of natural rubber, **40** 458
——, AND E. F. GUBANOV, Thermomechanical characterization of the molecular weight of linear polymers exemplified by natural rubber, **37** 99
TESTROET, F. B., see OSSEFORT, Z. T., **39** 1308
TEWKSBURY, L. B., see PIERSON, R. M., **31** 213
THACKRAY, G., see HAWARD, R. N., **38** 539
THELAMON, C., Vulcanization of rubber by means of resins, **36** 268

THEOCARIS, P. S., Relaxation response of polyurethan elastomers, **39** 375
THIRION, P. AND R. CHASSET, Relative contributions of viscoelasticity and aging to the relaxation of rubber vulcanizates, **36** 50
Relative contributions of viscoelasticity and aging to the relaxation of cured rubber, **37** 617
——, see CHASSET, R., **35** 317; **39** 870
——, see DESANGES, H., **31** 631
THOMAS, A. G., Rupture of rubber. V. Cut growth in natural rubber vulcanizates, **32** 477
VI. Further experiments of the tear criterion, **34** 66
——, see GENT, A. N., **36** 597; **38** 292
——, see MULLINS, L., **34** 301
——, see SOUTHERN, E., **36** 514
THOMAS, D. K., Limitations of the Tobolsky 'two network' theory in interpretation of stress relaxation data in rubbers, **40** 621
Network scission processes in peroxide cured methylvinyl silicone rubber, **40** 629
THORNE, J. A., see POLMANTEER, K. E., **39** 1403
——, see WHIPPLE, C. L., **39** 1247
THORNLEY, E. R., Role of antiozonants in modern tire compounding, **37** 973
TIKHOMIROV, B. P., see BLOKH, G. A., **32** 770
——, see YAKUBCHIK, A. I., **35** 1052, 1060, 1063
TIMM, T., see KRUSE, J., **33** 763
TINYAKOVA, E. I., B. A. DOLGOPLOSK, AND V. N. REIKH, Oxidation-reduction systems for initiation of radical processes. VI. Systems involving oxygen for initiation of oxidative degradation of polymers, **32** 231
——, E. K. KHRENNIKOVA, AND B. A. DOLGOPLOSK, Role of hydrogen disulfide in vulcanization, **31** 353
————, V. N. REIKH, AND T. G. ZHURAVLEVA, Role of oxidation-reduction systems in vulcanization with sulfur, **32** 220
——, see DOLGOPLOSK, B. A., **32** 244, 321
TOBIN, N. R., see MULLINS, L., **31** 505; **39** 799
TOBOLSKY, A. V., V. JOHNSON, AND W. J. MACKNIGHT, Cleavage reactions in crosslinked urethan elastomers, **40** 614
——, W. J. MACKNIGHT, AND M. TAKAHASHI, Relaxation of disulfie and tetrasulfide polymers, **39** 524
—— AND C. E. ROGERS, Anionic polymerization of isoprene: Effect of ionic character of the growing ion pair on polymer structure, **33** 652
Isoprene polymerization by organometallic compounds. II. **33** 655
—— AND M. TAKAHASHI, Characteristic viscoelastic parameters for amorphous polymers, **37** 285
Elemental sulfur as a plasticizer for polysulfide polymers and other polymers, **39** 1030
——, see LYONS, P. F., **39** 1634
——, see MELTZER, T. H., **37** 221
——, see MERCURIO, A., **33** 72
——, see NORLING, P. M., **38** 1198; **39** 278
TODD, R. V., see BROWN, R. J., **35** 546
TOKITA, N., see WHITE, J. L., **39** 436
TOLSTAYA, S. N., see TAUBMAN, A. B., **36** 143
TOLSTUKHINA, F. S., see DOGADKIN, B. A., **31** 569
——, see ZARHARENKO, N. V., **35** 326
TOMASHEVSKII, E. E., see BRESLER, S. E., **33** 462
TOUSSAINT, H.-E., see SCHEELE, W., **31** 539; **32** 128; **33** 846
TRAEGER, R. K., Dynamic mechanical testing to evaluate radiation induced changes in polymers, **39** 1268
TRAPEZNIKOV, A. A., Elastorelaxometer for large reversible deformation of elastomeric systems and polymer solutions, **34** 165
——, AND T. V. ASSONOVA, Strength and elastomeric properties of rubber solutions and their vulcanizates at high deformation rates, **33** 921
TRAPEZNIKOVA, O. N. AND G. E. SMIRNOVA, Scattering of light in crystalline polymers. I. Formation and melting of the crystalline phase in neoprene, **32** 463
TREGO, B. R., see MOORE, C. G., **35** 113
TRELOAR, L. R. G., Interpretation of the mechanical properties of covered-rubber yarns, **35** 949
——, see WILSON, N., **34** 1169
TRICK, G. S., Crystallization of modified *cis*-polybutadiene, **33** 699
——, see PIERSON, R. M., **31** 213
TRIEBEL, W., see SCHEELE, W., **32** 208
TRIVETTE, C. D., JR., E. MORITA, AND E. J. YOUNG, 2-Mercaptothiazole and derivatives as vulcanization accelerators, **35** 1360
TRIVISONNO, N. M., C. A. STEARNS, AND J. M. KIME, Dynamic testing apparatus for rubbers and plastics, **35** 937
TROFIMOVA, V. I., see KUSOV, A. B., **31** 513
TRUCHMANOVA, L. B., see KOROTKOV, A. S., **33** 610
TRUMBULL, H. L., David Craig (Obituary), **37(4)**xxiii
TSITOKHTSEV, V. A., see LISHANSKII, M. S., **40** 934
TSURUGI, J., Action of amines on the reaction of diphenylmethane with sulfur, **31** 773
II. Kinetics of hydrogen sulfide evolution during the reaction of diphenylmethane and sulfur, **31** 769
The chemistry of vulcanization. I. Diphenylmethane as a model of rubber hydrocarbon for its reaction with sulfur, **31** 762
——, AND H. FUKUDA, Reaction between diphenylmethane and 2,2′-dibenzothiazolyl disulfide, **31** 800
Action of 2,2′-benzothiazolyl disulfide on the reaction of diphenylmethane and sulfur, **31** 788
Chemistry of vulcanization. VI. Action of the zinc salt of 2-mercaptobenzothiazole on the reaction of diphenylmethane with sulfur **33** 211
VII. Role of zinc butyrate in the reaction of diphenylmethane, sulfur, and 2-mercaptobenzothiazole, **33** 217
——, F. TSUGIO, Y. MASAYUKI, AND I. HIROSHI, Radiation induced *cis* and *trans* isomerization of polyisoprenes and temperature dependence of the equilibria, **40** 1222
——, AND T. NAKABAYASHI, Action of 2-mercaptobenzothiazole on the reaction of diphenylmethane and sulfur, **31** 779
——, see FUKUDA, H., **34** 648; **35** 484, 491

TSVETKOV, V. N., Flexibility and shape of macromolecules, **36** 337
TSYDZIK, M. A., A. I. LUKOMSKAYA, AND G. L. SLONIMSKII, Dynamic methods for determination of bond strength between rubbers and between rubber and cord, **33** 42
TUCKER, H., Reaction of ozone with rubber, **32** 269
——, see DIEM, H. E., **34** 191
——, see SEMON, W. L., **31** 847
TUCKER, H. A. AND A. G. VEITH, Ring-alkylated p-phenylenediamines as antiozonants, **36** 537
TUMANOVA, A. I., see BUIKO, G. N., **33** 556
TUNG, C. C., see KILBOURNE, H. W., **32** 1155
TUNNICLIFFE, M. E., see COOPER, W., **39** 964
——, see CORISH, P. J., **39** 226
TURNER, D. T., Radiation crosslinking of rubber. Effect of additives, **31** 737
Irradiation of rubber and styrene. Graft polymer formation, **32** 1243
Radiation crosslinking of rubber. Yields of hydrogen and crosslinks, **34** 735
——, see BUROW, S. P., **39** 631
——, see MULLINS, L., **38** 1072
TUTORSKII, I. A., L. B. GINSBURG, AND B. A. DOGADKIN, Mechanism of disulfide decomposition under vulcanization conditions, **34** 334
——, V. V. MARKOV, L. P. FOMINA, V. B. BELYANIN, B. A. DOGADKIN, Cyclization of diene polymers, **36** 1019
——, see DOGADKIN, B., **31** 343, 348, 361, 751; **32** 184
TYLER, W. P., Analysis of composition and structure of rubber and rubber products, **40** 238

UELZMANN, H., Theoretical study of the mechanism of Ziegler-type polymerizations, **32** 597
UETZ, H., see WELLINGER, K., **34** 482
UNBEHEND, M., see HOFFMANN, M., **36** 815
UNGAR, I. S. AND G. A. LUTZ, Ozonation of butyl rubber to estimate unsaturation, **32** 205
URA, K., see SHIMOZATO, J., **31** 211
URANECK, C. A., M. G. BARKER, AND W. D. JOHNSON, Determination of molecular weight distributions of diene-containing rubbers by precipitation chromatography, **38** 802
UZINA, R. V. AND M. S. DOSTYAN, Bond strength at the cord-impregnant (adhesive)-rubber boundary layer, **32** 870
——, L. S. GROMOVA, AND S. A. VASIL'EVA, Methods for determination of rubber to cord bond strength, **32** 898

VACCA, G. N., Comparison of accelerated and natural tests for ozone resistance of elastomers, **32** 1080
VAKULA, V. L., H. YUN-TSUI, V. E. GUL, AND S. S. VOYUTSKII, Adhesion of high polymers. VI. The effect of molecular weight on NBR copolymers of various polarities on adhesion to polar and nonpolar materials, **34** 562
——, see VOYUTSKII, S. S., **35** 794; **37** 1153
VALAN, K. J., see PELLON, L., **39** 1617
VALVASSORI, A., see NATTA, G., **36** 988, 1583
——, see SARTORI, G., **38** 620
VAN AMERONGEN, G. J., Diffusion in elastomers, **37** 1065
——, J. F. BENDERS, AND H. C. J. DEDECKER, Tire abrasion at different temperatures, **31** 650
VAN BEEK, L. AND B. VAN PUL, Internal field emission in carbon black loaded natural rubber vulcanizates, **36** 740; **37** 348
VAN BEEK, W. V. C., see BUSSEMAKER, O. K. F., **37** 28
VANDERBILT, B. M. AND R. E. CLAYTON, Bonding of fibrous glass to elastomers, **38** 379
VAN DER BURG, S., see TAWNEY, P. O., **38** 352
VAN DER HOFF, B. M. E., Reactions between peroxide and polydiolefins, **38** 560
VANDERHOFF, J. W., H. L. TARKOWSKI, M. C. JENKINS, AND E. B. BRADFORD, Theoretical consideration of interfacial forces involved in coalesence of latex particles, **40** 1246
VAN KREVELEN, D. W. AND P. J. HOFTYZER, Practical evaluation of the viscosity and molecular weight relation, **40** 806
VAN PUL, B. I. C. F., Ozone resistance of natural rubber vulcanizates, **31** 866
——, see VAN BEEK, L., **36** 740; **37** 348
VAN VERTH, J. E., see KILBOURNE, H. W., **32** 1155
VANZO, E., Ordered structures of styrene butadiene block copolymers, **40** 1526
VASIL'EVA, S. A., see PINEGIN, V. A., **32** 503
——, see UZINA, R. V., **32** 898
VAUGHAN, G., see COOPER, W., **36** 488; **39** 964
——, see GERMAN, R., **40** 569
VEERMANS, A., see DE KOCK, R. J., **40** 563
VEITH, A. G., Quantitative measurement of rate of ozone cracking, **32** 346
New tear test for rubber, **38** 700
——, see JUVE, A. E., **35** 1276; **36** 313; **37** 434
——, see TUCKER, H. A., **36** 537
VERBANC, J. J., M. S. FAWCETT, AND E. J. GOLDBERG, A new hydrocarbon elastomer. II. Properties of an ethylene-propylene-nonconjugated diene terpolymer, **35** 1126
VERHAAR, G., Natural latex as a colloidal system, **32** 1627
VIA, G. H., see KRIGBAUM, W. R., **40** 788
VIEHMANN, W., Surface heating by friction and abrasion by thermal decomposition, **31** 925
VILNITS, S. A., see GUL, V. E., **32** 692
VINOGRADOVA, N. D., see LISHANSKII, M. S., **40** 934
VIOHL, P., see TAWNEY, P. O., **33** 229
VISHNITSKAYA, L. A., see BARTENEV, G. M., **36** 59
VOEKS, J. F., Cohesive energy density and internal pressure of high polymers, **39** 969
VOET, A., New dispersible carbon blacks, **37** 1006
Surface area of nonporous carbon black and area of the adsorbed nitrogen molecule, **37** 630
Fundamental properties of high structure blacks, **38** 677

VOET, A. AND F. R. COOK, Mild stress softening and dynamic properties of rubber vulcanizates, **40** 1364
——, see DONNET, J.-B., **40** 919
——, see MARSH, P. A., **40** 359
VOHWINKEL, K., Use of white pigments in the rubber industry, **36** 158
VOLODIN, V. P., see FOMENKO, B. A., **37** 365
VON ARNIM, E., see CHARLESBY, A., **31** 98
VOORN, M. J. AND J. J. HERMANS, Wandering of crosslinks in rubber at high temperature, **32** 696
VOSKRESENSKII, V. A., see BYL'EV, V. A., **37** 770
VOTINOV, M. P. AND E. V. KUVSHINSKII, Thermoelastic phenomena in SKS-30A and SKB rubber compounds in adiabatic deformation, **32** 1016
——, S. A. SUBBOTIN, V. V. SAMOLETOVA, S. P. KONYTOVSKAYA, AND E. V. KUVSHINSKII, Crystallizability of SKI vulcanizates by adiabatic stretching, **33** 988
——, L. L. SULZHENKO, AND E. V. KUVSHINSKII, Thermoelastic phenomena in natural rubber compounds during cyclic deformation, **32** 1020
VOYUTSKII, S. S., Diffusion theory of adhesion, **33** 748
Elastomeric adhesion and adhesives, **34** 1188
——, AND R. M. PANICH, Stability of high polymer latexes and their electrokinetic potentials, **31** 1105
——, A. I. SHAPOVALOVA, AND A. P. PISARENKO, Adhesion of high polymers. 3. Effects of the size, shape, and polarity on adhesion to cellophane, **31** 712
—— AND V. L. VAKULA, Adhesion of synthetic rubbers to various high molecular substrates, **35** 794
Effects of self-diffusion and inter-diffusion in polymer systems, **37** 1153
——, see RAEVSKII, V. G., **34** 879; **35** 1041, 1047
——, see SHAPOVALOVA, A. I., **31** 89
——, see VAKULA, V. L., **34** 562

WADELIN, C., see AMBELANG, J. C., **36** 1497
——, see HIVELY, R. A., **32** 123
WAGNER, M. P., see BACHMANN, J. H., **32** 1286
——, see LANING, S. H., **33** 890
——, see SELLERS, J. W., **34** 729
WAKASUGI, T., see IWAKURA, Y., **33** 416
WALL, L. A. AND J. H. FLYNN, Degradation of polymers, **35** 1157
——, see YU, H., **39** 982
WALLENBERGER, F. T., Structure of angular polycycloisoprene, **36** 558
WALTERS, M. H., Fibrous structure in stretched crystalline elastomers, **37** 839
—— AND D. N. KEYTE, Heterogeneous structure in blends of rubber polymers, **38** 62
WANLESS, G. G., P. E. WEI, AND J. REHNER, JR., Reactions of isoparaffins with sulfur and di-t-butyl peroxide, **35** 562
Reactions of isoparaffins with sulfur and di-t-butyl peroxide, **35** 118
WARFIELD, R. W. AND M. C. PETREE, Thermodynamic properties of natural rubber and isoprene, **39** 143
WARGIN, R. V., see CASE, L. C., **39** 1489
WARNAKA, G. E., Dynamic strain effects in elastomers, **36** 407
——, AND H. T. MILLER, Strain dependent properties of polymers. I, **39** 1421
——, see MILLER, H. T., **39** 1428
WATANABE, K., Stress relaxation and creep of several vulcanized elastomers, **35** 182
WATSON, A. A., see SAVILLE, B., **40** 100
——, see MOORE, C. G., **34** 795
WATSON, W. F., Chemical reactions induced by polymer deformation, **33** 80
——, AND D. WILSON, A uni-rotor mixer for rubbers and plastics, **31** 667
——, see ANGIER, D. J., **31** 58, 73
——, see DUNN, J. R., **33** 423, 433
——, see HUGHES, B. G., **36** 875
——, see LEE, D. F., **36** 1005
——, see MULLINS, L., **33** 91
——, see PAYNE, A. R., **36** 147
——, see SCANLAN, J., **33** 1201
WATTS, J. T., see BUSWELL, A. G., **35** 421
WAYLAND, H., Streaming birefringence as a rheological research tool, **40** 748
WEI, P. E. AND J. REHNER, JR., New vulcanizing systems for ethylene-propylene elastomers, **35** 133
New vulcanizing agents for ethylene-propylene elastomers. II, **35** 1091
——, G. E. SERNIUK, AND J. REHNER, JR., New vulcanizing agents for ethylene propylene elastomers. III, **39** 1094
——, see MAKOWSKI, H.-S., **38** 599
——, see SERNIUK, G. E., **39** 1105
——, see WANLESS, G. G., **35** 118
WEIDNER, C. L. AND G. J. CROCKER, Elastomeric adhesion and adhesives, **33** 1323; **34** 1190
WEINSTOCK, K. V., see JANSSEN, H. J. J., **34** 1485
WEIR, D. S., see SNYDER, C. E., **39** 1161
WEIS-FOGH, T., Properties of resilin, a rubberlike protein, **36** 90
WEISSBEIN, L., see SINGH, A., **40** 1230
WEISSERT, F. C. AND B. L. JOHNSON, Structural characteristics of alkyllithium catalyzed polymers derived from butadiene and styrene, **40** 590
WEITZEL, D. H., see ROBBINS, R. F., **37** 154
WELDING, G. N., see ELLIS, B., **37** 563, 571
——, see RUSSELL, R., **36** 835; **37** 576, 583
WELLINGER, K. AND H. UETZ, Abrasive wear research on rubber, **34** 482
WENISCH, W. J., see BEVILACQUA, E. M., **38** 647
——, see TAWNEY, P. O., **38** 352
WENTZ, R. P., see HOPKINS, I. L., **39** 1065
WESTERMAN, L., see GAMBLE, L. W., **38** 823
WESTFAHL, J. C. AND D. CRAIG, Aldehyde-amine accelerators. The structure of some substituted dihydropyridines, **36** 259

Westlinning, H. and G. Butenuth, Swelling and network (crosslink) density of carbon black filled natural rubber vulcanizates, **35** 274
———, and G. Leineweber, Crystallization phenomena in filled, unstretched, natural rubber, **35** 615
——, see Butenuth, G., **37** 311
Whipple, C. L. and J. A. Thorne, Performance of elastomeric silicones in ablative and space environments, **39** 1247
Whitby, G. S., Carl Dietrich Harries (biographical), **34**(4)xxii
Sir William A. Tilden (biographical), **38**(1)xii
Johan Rudolf Katz (biographical), **39**(3)xcii
White, F. L., see Angove, S. N., **39** 755
White, J. L. and N. Tokita, Rheological analysis of raw elastomers with the multispeed mooney shearing disk viscometer, **39** 436
——, see Metzner, A. B., **40** 1426
Wiegand, W. B., Determinants in Research (Goodyear address), **35**(4)xxiv
Wiener, F. M. and C. M. Gogos, Determination of the damping characteristics of fabric reinforced rubber strips for flexural waves at audio frequencies, **34** 158
Wilder, G. R., see Kilbourne, H. W., **32** 1155
Wilkes, R. A., see Cunneen, J. I., **40** 921
Williams, H. L., see Henderson, J. F., **38** 817
Williams, M. L., see Howard, W. H., Viscoelasticity and flatspotting, **40** 1139
Williamson, G. R., see Booth, C., **38** 314
——, see Haward, R. N., **38** 539
Willis, J. A., see Smith, W. A., **34** 176
Wiegand, J. H., Recent advances in mechanical properties evaluation of solid propellants, **37** 542
Wiegand, J. H., see Bills, K. W., **37** 524
Wiegand, J. H., see Milloway, W. T., **37** 511
Wills, D. C., see Spacht, R. B., **37** 210; **38** 134
Wilson, D., see Watson, W. F., **31** 667
Wilson, N. and L. R. G. Treloar, Rubber models of yarns and cords; the "doubling" of single rods, **34** 1169
Wincklhofer, R. C., see Papero, P. V., **38** 999
Wingard, R. E., see Hammett, R. E., **39** 206
Winslow, F. H., see Hawkins, W. L., **32** 1164, 1171
Wise, R. W., see Campbell, R. H., **37** 635, 650
——, see Decker, G. E., **36** 451
——, and A. B. Sullivan, Determination of amine type antidegradants by high-temperature gas chromatography, **35** 684
Wofford, C. F., see Zelinski, R. P., **38** 871
Wolf, K. A., see Heinze, H. D., **35** 776
Wolf, R. F., International Rubber Science Hall of Fame, **39**(3)lxxxix
——, see Bachmann, J. H., **32** 1286
Wolfe, J. R., Jr. and J. R. Albin, Polyisocyanates as curing adjuvants for ethylene-propylene terpolymers, **37** 927
Wolstenholme, W. E., Polymer flow behavior from multispeed viscometry, **38** 769
Wood, L. A., Elasticity of rubber, **31** 959
Glass transition temperatures of copolymers, **31** 459
Stress strain relation of pure gum rubber vulcanizates, in compression and tension, **32** 1
Tables of physical constants of rubbers, **39** 132
——, I. Madorsky, and R. A. Paulson, Determination of copolymer composition by combustion analysis for carbon and hydrogen, **33** 1132
——, and G. M. Martin, Compressibility of natural rubber at pressures below 500 kg/cm^2, **37** 850
——, and F. L. Roth, Creep of pure-gum rubber vulcanizates from indentation-time measurements, **36** 611
——, see Linnig, F. J., **39** 940
——, see Roth, F. L., **39** 397
Worsfold, D. J. and S. Bywater, Anionic polymerization of isoprene, **38** 627
Wren, W. G., Chemistry of natural rubber production, **34** 378
Wright, B., see Haward, R. N., **38** 539
Wright, R. A., see Stafford, W. E., **31** 599
Wu, R. T. and D. I. Sapper, Improved flexing machine. I. Description and application to studies of cut growth, **38** 730

Yabuta, S., Shape of specimen and the measurement of permanent set, **34** 342
Yakubchik, A. I., S. Y. Grilikhes, B. I. Tikhomirov, and V. S. Purlova, Bonding of polyethylene to metals and rubber with hydrogenated polybutadiene, **35** 1060
——, and G. N. Gromova, Hydrogenation of butadiene rubber, **31** 156
II. Influence of the solvent with palladium-on-calcium carbonate catalyst, **31** 588
——, N. G. Kasatkina, G. I. Demidova, and G. B. Fedorova, Oxidative decomposition of the ozonide of butadiene rubber, **32** 288
——, N. G. Kasatkina, and T. E. Pavolvskaya, Ozonization of unsaturated compounds. III. The addition of ozone to internal and external double bonds in butadiene rubber, **32** 284
——, V. N. Reikh, B. I. Tikhomirov, and A. V. Pavlikova, Effect of hydrogenation on the properties of polybutadiene rubbers, **35** 1052
——, and A. I. Spasskova, Chemical structure of the "popcorn" polymer of butadiene, **31** 581
Studies on the structure of SKN-26 and SKN-40 rubbers using ozonolysis methods, **34** 200
——, B. I. Tichomirov, and V. S. Sulimov, Hydrogenation of natural and synthetic *cis*-1,4-polyisoprene, **35** 1063
Yamagami, M., see Tsurugi, J., **40** 1222
Yaminskaya, E. Y., see Pavlov, N. N., **32** 907
Yampolskii, B. Y., U. Shu-Tsiu, and P. A. Rebinder, Structurization in hydrocarbon suspensions of carbon black in relation to the behavior of active rubber fillers, **35** 877
Yanko, John A., see Semon, W. L., **31** 847
Yanovskii, D. M., see Berlin, A. A., **33** 1188; **34** 760

YAROSHEVICH, A. G., see BLOKH, G. A., **32** 118
YASUDA, G., Molecular weight dependence of relaxation spectra of amorphous polymers in the rubbery region. VIII. Comparison of experimental relaxation spectra of commercial synthetic rubbers with those estimated from molecular weight distributions, **40** 484
——, E. MAEKAWA, T. HOMMA, AND K. NINOMIYA, VII. Comparisons of experimental relaxation spectra with those estimated from molecular weight distributions, **40** 1470
——, see NIMOMIYA, K., **40** 493
YAU, W. AND R. S. STEIN, Light scattering from crystalline super-structure in stretched natural rubber, **38** 58
YEH, G. S. AND D. I. LIVINGSTON, Indentation and puncture properties of rubber vulcanizates, **34** 937
YERRICK, K. B. AND H. N. BECK, Solvent resistance of silicone elastomers: solvent-polymer interactions, **37** 261
YOKOYAMA, T., see TANAKA, T., **35** 970
YONEZAWA, T., see O'DRISCOLL, K. F., **40** 883
YOUMANS, R. A. AND G. C. MAASSEN, Correlation of room temperature shelf aging with accelerated aging, **32** 647
YOUNG, E. J., see MORITA, E., **36** 844
——, see TRIVETTE, C. D., JR., **35** 1360
YU, H. AND L. A. WALL, Radiolytic stress relaxation of an ethylene propylene copolymer, **39** 982
YUE-JIN, U., see ZUEV, Y. S., **35** 437
YUN-TSUI, H., see VAKULA, V. L., **34** 562

ZAITSEVA, V. D., see BARTENEV, G. M., **34** 1201
ZAITSEV, V. D., see KUZMINSKII, A. S., **36** 541
ZAKHARCHENKO, P. I., see DOGADKIN, B. A., **31** 655
ZA'HARENKO, N. V., F. S. TOLSTUKHINA, AND G. M. BARTENEV, Flow of rubberlike polymers with and without carbon black, **35** 326
ZAKHAROV, N. D., Vulcanization of carboxylic rubbers, **36** 568
——, AND T. A. SHADRICHEVA, Influence of acids on scorching and vulcanization of carboxylic rubbers, **36** 575
ZAMBELII, A., see NATTA, G., **40** 400
ZANNETTI, R., P. MANARESI, AND L. BALDI, Beta ray absorption in polymers and determination of first and second-order transition temperatures, **36** 459
——, see BALDI, L., **36** 660
ZAPAS, L. J. AND T. CRAFT, Correlation of large longitudinal deformations with different strain histories, **40** 506
——, see BERNSTEIN, B., **38** 76
ZELENEV, Y. V., see BARTENEV, G. M., **36** 709
ZELINSKI, R. P. AND C. F. WOFFORD, Synthesis of trichain and tetrachain radial polybutadienes, **38** 871
——, see SHORT, J. N., **32** 614
ZENCHENKO, A. I., see ANGERT, L. G., **34** 807
ZERBINI, V., see ANGIOLETTI, A., **38** 1115
ZHAKOVA, V. G., see ANIKANOVA, K. F., **31** 30
ZHEREBKOV, S. K., see DERYAGIN, B. V., **33** 757
——, see MEDVEDEVA, A. M., **32** 67
ZHURKINA, Z. N., see ZUBOV, P. I., **32** 539
ZHURAVLEVA, T. G., see DOLGOPLOSK, B. A., **32** 321
——, see TINYAKOVA, E. I., **32** 220
ZHURKOV, C. N., T. P. SANFIROVA, AND E. E. TAMASHEVSKII, Mechanical properties of rubber at high rates of elongation, **35** 813
ZHURKOV, S. N., see BRESLER, S. E., **33** 462
ZIARNIK, G. J., Chlorobutyl rubber—optimum processing procedures, **35** 467
ZIEGLER, K., Consequences and development of an invention, **38**(1)xxiii
ZINCHENKO, N. P., see BUIKO, G. N., **33** 556
ZNAMENSKAYA, A. K., see SUBBOTIN, S. A., **31** 44
ZORLL, U., Simple theory of filler reinforcement in elastomers subjected to shear, **40** 1330
ZUBOV, P. I., Z. N. ZHURKINA, AND V. A. KARGIN, Structure of gels. X. Globulization of rubber under the action of nonsolvents, **32** 539
——, see NOVIKOV, A. S., **31** 27
——, see ZVEREV, M. P., **32** 536
——, see GAVRISHCHUK, V. Y., **35** 517
ZUEV, Y. S., The photovulcanization of butyl and SKB (polybutadiene rubbers), **32** 557
——, A. Z. BORSHCHEVSKAYA, S. I. PRAVEDNIKOVA, AND U. YUE-JIN, Influence of the temperature upon the durability of rubber in corrosion cracking, **35** 437
——, AND S. I. PRAVEDNIKOVA, Effect of degree of elongation on ozone cracking of rubbers, **32** 278
Influence of concentration of ozone upon cracking of vulcanized rubber, **35** 411
ZUKERMAN, N. J., see KLEBANSKII, A. L., **32** 588
ZVEREV, M. P. AND P. I. ZUBOV, Structure of Gels. IX. Effects of plasticizers on the physical properties of styrene butadiene rubber, **32** 536

SUBJECT INDEX

Abrasion, **35** 1342; **39** 287
against abrasive paper, **32** 1199
and carbon black structure, **34** 43
and friction, **31** 982
and high-speed tensile strength, **39** 823
and hysteresis, **33** 857
measuring, with radioactivity, **40** 969
of polybutadiene, natural rubber blends, **39** 452
-reinforcement; methods of evaluation, **35** 1276; **36** 313
resistance, ISO standard, du Pont method, **31** (1)xiv
resistance, of latex masterbatch, **31** 147
and road wear, **31** 387
by sand, **34** 482
and strength of rubber, **39** 287
and temperature, **31** 650
testing,
laboratory apparatus, **38** 475
laboratory and road, **31** 387
Pico tester, **34** 1
towing rig, **35** 339
by thermal decomposition, **31** 925
of tire tread stocks, **31** 166; **35** 354; **38** 457
of vulcanized rubber, **37** 291
against wire gauge, **32** 471
Absorption spectra of polysulfides, **31** 808
Abstracts, 91st Meeting Division of Rubber Chemistry, **40** 1585
Accelerated vulcanization, delay model, **37** 689
Accelerators—see also individual compounds, Vulcanization
Accelerators, **32** 976
action of in vulcanization, **32** 174, 184
analysis for, **31** 953; **35** 449, 665; **37** 635, 709; **40** 238
analysis for, **37** 950
basic, **33** 834
binary systems, **33** 373
exchange with radiosulfur, **34** 588, 597, 600; **35** 652
mechanism of action, **38** 1
for nitrile rubber, **37** 137
in polybutadiene, **31** 329
reactions, with sulfur, **31** 343
reactions, with rubber, **38** 204
residues, and age resistance, **33** 490
review, **35** 1
sulfenamide, **35** 484, 491; **37** 204; **38** 176, 189
thiocarbamoyl sulfenamides, **35** 644
UV spectra, **37** 709
Accidents and skid resistance, **40** 684
Acidic monomers in elastomers, **30** 1347
Acid rubbers, use of, in rockets, **39** 112
Acids, effects, on vulcanization of carboxylic rubbers, **36** 575
as vulcanization retarders, **35** 501
Acrylate polymers, vulcanization of oriented, **40** 650
Acrylic acid copolymers in rockets, **39** 112
Acrylonitrile, see also Nitrile rubber
butadiene styrene resins, review, **38** 1164, 1180
methyl methacrylate copolymers, viscosity, **40** 522
Activation energy of vulcanization, **35** 76
Adduct rubbers, **31** 213
Adhesion, **33** 1323
and adsorption, **39** 36
comparison of electrical and diffusion theories, **33** 240
and compatibility, **32** 519
of cured rubbers, **33** 42
diffusion theory, **33** 748
effect of vulcanization on, **34** 879
and elastomer structure, **35** 1041, 1047
of elastomers (polemical), **34** 1188, 1190
and electrical effects, **33** 1180
and filler reinforcement, **40** 801
of high polymers, **31** 89
of high polymers to cellophane, **31** 712
at high pressure, **32** 527
hydrogenated polybutadiene, used in, **35** 1060
of multiply structures, **33** 953
of nitrile rubbers, **34** 562
in plied-up rubber articles, **32** 1192; **33** 306, 384, 581
of rubber to cords, **32** 870, 898
and rubber friction, **39** 306, 320
of rubbers to metals, **33** 757
of synthetic rubbers to polymers, **35** 794
Adsorbents, **39** 36
Adsorption, of butyl rubbers, **37** 1044
and carbon black surface area, **40** 1305
on fillers, **36** 143
of macromolecules from solution, **39** 36
of nitrogen on carbon black, **37** 630
Aeration of natural rubber latex, **31** 425, 430
Age resisters, **37** 720
Aging, see also Antioxidants, Antiozonants, Age resisters, Oxidation, Stress relaxation, Tensile strength
accelerated and natural, correlation of, **32** 1088, 1104, 1117, 1134
and accelerators, **33** 490
of butyl, **39** 581
chain and crosslink scission in, **34** 922
with dithiocarbamates present, **32** 739
effect, on diffusion, **37** 1130
effect, on dynamic properties, **37** 866
of latex compounds, **34** 834
of latex (review), **38** 1214
by light in sulfur vulcanizates, **31** 747
of natural rubber, **39** 1565, 1577
of neoprene, **37** 76
and oxidation of elastomers, **30** 1251
and oxidation (review), **38** 1198
of polybutadiene, **36** 747
of polyurethan foams, **37** 38
of pyridine rubber, **39** 88
of radiation vulcanizates, **34** 910
of raw natural rubber, **39** 1608
and stabilization, of rubber (review), **39** 88
of SBR, **33** 510; **38** 647
of thiuram vulcanizates, **31** 327
of TMTD vulcanizates, **31** 327
of transparent vulcanizates, **34** 919
of tread compounds, **37** 985
viscoelasticity and relaxation, **36** 50; **37** 617
and ultimate elongation, **33** 502
in ultraviolet light, **34** 686
Agglomeration,
of latexes by freezing, **36** 581
and flex cracking, **36** 754
Aldehyde-amine accelerators, **36** 259
Alfin polymers,
molecular weight control, **38** 103
tack, **32** 48
Alkylaluminum halides, in butadiene polymerization, **39** 508
in isoprene polymerization, **33** 689, 696
Alkyllithiums, in butadiene polymerization, **34** 176
in chloroprene polymerization, **38** 991
in isoprene polymerization, **34** 191; **38** 863
in solution polymerization, **39** 491
Aluminum, alkyls in isoprene polymerization, **31** 838
triisobutyl, in isoprene polymerization, **37** 103
Amines in vulcanizate analysis, **40** 100
Analysis, see also materials analyzed for: Accelerators, Rubbers, *etc.*

of accelerators and antioxidants, **31** 953; **36** 1119; **37** 950
for amine antioxidants, **32** 844
of antiozonant effectiveness, **33** 899
for antiozonants during ozonation, **36** 194
of butyl unsaturation, **34** 205
of carbon black type, **40** 1323
of copolymers by combustion, **33** 1132
of copolymers, by NMR, **40** 1200
of crosslink types, **40** 866
for dicatecholborate, DOTG salt, **33** 237
of dithiocarbamates and sulfur by chromatography, **35** 449
of EP copolymers by near infrared, **39** 956
of EPT unsaturation, **40** 936
of extender oils, **37** 451
for free sulfur in accelerators, **32** 123
for gel, **37** 904
and identification of elastomers by gas chromatography, **37** 741
infrared of ethylene to propylene ratio, **39** 226
for latex rubber content, **37** 736
of mechanical properties of tires, **40** 271
of molecular weight distribution by elution chromatography, **36** 502
for natural rubber, **37** 733
of nitrile rubber structure by ozonolysis and chromatography, **34** 200
for phenylene diamines, **34** 816
of polybutadiene structure, **37** 408; **39** 945
of polyisoprene, in mixtures **33** 591
by peroxidation, **33** 587
of polymers, (review), **34** 1553
by gas chromatography, **32** 248; **39** 259
by mass spectrometry, **36** 794
of polyurethans, **37** 146
of protective agents by gas chromatography, **35** 684
rheological, **39** 436
of rubber, **32** 1452; **34** 1553
(review), **40** 238
MBT reaction products, **37** 709
for rubber chemicals, by polarography, **32** 1254
for sulfur groups, **32** 941
swelling, rapid method, **37** 668
for TMTD, **36** 305
for thiazoles, **35** 665
for vulcanization intermediates, **37** 635, 650
of vulcanizate structures, **40** 100
for unsaturation with radiochlorine, **36** 1071
of zinc oxide concentration, **33** 890
Anatase in rubber, **36** 158
Anethesia by diffusion, **40** 928
Anionic polymerization of isoprene, **33** 652
Anisotropy of filled vulcanizates, **35** 317
Anisotropy of thermal conductivity, **39** 678
Anomaly in freezing point depression of gels, **33** 245
Antifatigue agents, **38** 657, 661, 666
Antioxidants, (review), **37** 720; **39** 88
amine, analysis, **32** 844
analysis for, **37** 950; **40** 238
analysis, **31** 953
by gas chromatography, **35** 684
and antiozonants, **37** 720
for general purpose elastomers (review), **36** 1497
carbon black as, **38** 636
effect of, on bound rubber, **31** 369
on cut growth, **39** 348
on fatigue, **37** 361
on ozone resistance, **31** 882
efficiency of p-phenylenediamines, **34** 816
and fatigue, **36** 480
for polyethylene, effect of carbon black, **32** 1164, 1171
for SBR,, **33** 510
sorption from solution, **33** 528
thiazoles and dithiocarbamates as, **36** 887
tritiated, **35** 692
in ultraviolet light aging, **34** 686
volatility, **34** 807; **37** 210; **38** 134
Antiozonants, (review), **36** 1497
analysis for, **37** 960
analysis, and reaction with ozone, **36** 194
and antioxidants, **37** 720
chemical, **32** 364
and fatigue, **37** 1361
mechanism of action, **36** 194; **36** 201
p-phenylenediamines, ring-alkylated as, **36** 537
reaction with ozone, **39** 1584
screening, **33** 899
for SBR, **32** 1155
in tires, **37** 210
Antirads, **33** 476, 483; **34** 228, 250; **34** 741
Antivibration mountings, **32** 1209
Apparatus, for abrasion studies, **38** 475; **35** 354
abrasion tester, laboratory, **34** 1
for adhesion measurement, **33** 42
adhesion test method, **38** 791
for birefringence and photoelasticity (in review), **38** 1115
for blowing agent evaluation, **34** 357
CEPAR for cure studies, **34** 765, 777
for compressing carbon black, **40** 1311
for contact potential of pigments, **36** 176
for continuous mixing, **33** 98
for cure rate measurement, **36** 922
cut growth tester, **38** 730
dilatomer, **38** 347
for dynamic adhesion testing, **32** 889
for dynamic modulus at low strain, **33** 272
dynamic tester, sinusoidal-strain, **36** 422
for dynamic testing, **35** 388; **34** 790; **35** 937
dynamic testing, of automotive parts, **37** 866
extensometer, **31** 673; **36** 68
for fatigue testing, **34** 506
for flexcracking, **37** 186
for friction measurements, **35** 379
for hardness testing, micro, **33** 876
for heat of immersion, **40** 1305
for high speed tensile testing, **36** 28
of cord, **32** 907
hysteresimeter, **34** 347; **34** 1107
for hysteresis measurement, **34** 347
indentation failure tester, **37** 14
Madelow-Smith plastometer, **37** 491
for measuring wave propagation in rubber, **32** 21
metal-bath stress-strain, **38** 782
microtome with oscillating-blade, **36** 514
for mixing small samples, **31** 667
for ozone reaction studies in closed system, **37** 583
for ozone resistance testing, **31** 866; **32** 346, 1080; **34** 1220
for polymer transitions determination, **34** 705
for power loss measurement, **32** 915
rheometer, oscillating disk, **36** 451
ring crack-growth tester, **38** 719
rotating cylinder viscometer, **34** 165
skid resistance tester, **38** 840
for static friction measurement, **34** 461
for studying pore formation, **34** 357
for swelling pressure measurement, **40** 532
tack measurement, **32** 48; **38** 689
tackmeter, **37** 28
tear test, **38** 700
thermogravimetric analysis, **37** 934; **40** 445
Viscurometer, **37** 434
vulcanization, fluid-bed, **36** 875
for wear testing, **35** 339
Area and identification of carbon black, **40** 1323
Argon diffusion in rubber, **40** 1156
Asphalt, improvement by rubber, **37** 1049
and rubber in roads, **37** 457
Atactic, see Stereoregularity, **39** 14
Atmospheric attack on rubber, **30** 1251; **31** 1015
Attrited carbon black, **34** 16
Authors, 100 top, **39**(2)liv
Authors' instructions, **40**(1)xviii
Autohesion, See adhesion,
Azo compounds, as vulcanizing agents, **32** 544
Azodicarboxylates, as blowing agents, **39** 211

Baker-Williams apparatus, **36** 502
Balata, crystallization, **40** 1394
effect of radiation, **39** 992
molecular weight of, **36** 488
Balloons, evaporating rubber, **30** 1161
Banbury mixer, rotor speeds, **31** 907
Basic monomers in elastomers, **30** 1387
Battery jar, design, **39** 1065

Benzene, freezing point depression by rubber, **40**(1) **xliv**
interaction parameter with rubber, **37** 446
vapor pressure over rubber, **40** 1159
Benzothiazole sulfenamides, **33** 357, 361
Benzothiazolinethione, acceleration of natural rubber vulcanization, **31** 548
action, in vulcanization of model compounds, **31** 779
analysis, **35** 665
complexes, **39** 1115
derivatives, **32** 983; **33** 357
and derivatives as vulcanization accelerators, **35** 1360
in natural rubber vulcanization, **31** 348
reaction, with sulfur, **31** 343
reaction with rubber, **32** 184; **35** 676; **27** 709
vulcanizate structure from, **36** 547
vulcanization with, **31** 751; **37** 557
——, and benzothiazolyl disulfide disappearance during use, **37** 635, 650
Benzothiazolyl disulfide, as antioxidant, **36** 887
reaction, with diphenylmethane, **31** 788, 800; **34** 648
reaction, with radioactive sulfur, **34** 334
in vulcanization of natural rubber, **36** 863
Benzoyl hydroperoxide oxidation of isoprene polymers, **33** 587
Benzoyl peroxide vulcanization of natural rubber, **39** 768
Berry, Scanlan, Watson hypothesis, **40** 1060
Best paper committee, **39**(4)cxviii
Beta ray absorption in polymers, **36** 459
Biaxial, failure of polymers, **40** 710
fatigue testing, **34** 506
Binary solvent interaction with rubber, **32** 77
Biographical sketches and obituaries, Behney, D. F., **39**(5)xxxvi
Carothers, W. H., **37**(1)xxviii
Craig, D., **37**(4)xxxiii
Fisher, H. L., **36**(2)xix
Garvey, B. S., Jr., **38**(3)xxix
Grace, N. S., **38**(4)iv
Harries, C. D., **34**(4)xxii
Howland, L. H., **37**(4)xli
Juve, A. E., **39**(1)xxv
Katz, J. R., **39**(3)xcii
Patrick, J. C., **39**(5)cl
Staudinger, H., **40**(3)xvi
Tilden, W. A., **38**(1)xii
Biosynthesis of rubber, **34** 378, 1229; **40** 679
Birefringence, (review), **38** 1115
of block copolymers, **40** 1373
at high strain, **39** 1436
as a measure of branching, **31** 699
and melting point, **40** 788
and photoelasticity, **38** 1115
streaming, **40** 748
Bisphenol polycarbonate elastomers, **39** 1008
Bitumen, see Asphalt,
Blends, analysis of, by gas chromatography, **39** 248, 259
crystallization, **40** 341
heat of mixing, **31** 250
ozone cracking, **40** 635
of polybutadiene and natural rubber, **32** 308
of polymers, **40** 1119
properties, **38** 62, 539
of rubbers, **38** 49, 244
symposium on, **40** 323
viscosity and solubility of, **31** 244
Block copolymerization, by mechano-chemical means, **33** 457; **33** 964
Block copolymers, birefringence, **40** 1373
of butadiene and styrene, **40** 1183
structures, **40** 932
solution structure, **40** 1526
viscoelasticity, **40** 1105
detection, by DTA, **39** 1513
Blooming, internal, in rubber, **37** 338
of sulfur, **35** 149
Blowing agents, apparatus to study, **37** 357
in microporous footwear, **33** 1193
for polysulfide rubbers, **39** 211
Bond energy, in disulfides, **35** 661
Bond strength, under dynamic conditions, **33** 42
and mechanochemical effects, **33** 953
between plies, **32** 1193
in plied-up structures, **33** 545, 556, 581
theory, **33** 306
in tire carcasses, **32** 503, 513
in tires, **33** 556
Bonding rubber to metal, **32** 67
Boron-containing elastomers, **39** 1184
Bound rubber, **31** 369, 374; **32** 825, 1185; **37** 1013, 1040, 1299; **38** 1070
effect of filler loading, **35** 599
and temperature, **35** 613
and vulcanizate properties, **40** 817
Braking and traction, **33** 158
Branching, in alkyllithium polymers, **40** 590
in butadiene rubbers, **34** 975
and elasticity, **39** 1472
of polybutadienes, **40** 1529
in polyisoprenes, **36** 807
and solution properties, **36** 488
in synthetic rubbers, **31** 699
Breakdown and vulcanization with MBT, **31** 348
Breaking elongation and aging, **33** 502
Breeding of hevea brasiliensis, **34** 413
Bromination, effect of, on dimensions of natural rubber molecule, **35** 908
Bulk polymerization in natural rubber, **32** 799
Butadiene, alkyllithium polymers, **40** 590
block copolymers, structure, **40** 1526
copolymerization with en-yne diols, **37** 774
copolymers, birefringence, **40** 1373
polymerization, **35** 1066
with alkyllithium, **34** 176
with cobalt octoate, **39** 508
in "jump" reactions, **40** 895
by rhodium salts, **40** 602
polymers, peroxide vulcanization, **40** 149
popcorn polymer, **31** 581
rubber—see polybutadiene
styrene block copolymers, viscoelasticity, **40** 1105
sulfone, isomerization with, **40** 921
Ziegler polymerization, **36** 1571
Ziegler copolymerization, with isoprene, **37** 121
Butene-2, reaction with ozone, **36** 201
Butyl peroxide chain scission during cure with, **34** 309
Butyl rubber, see also Polyisobutene, **34** 372; **38** 940
review, **32** 1475
abrasion, **37** 291
and tensile strength, **39** 287
adhesion, to metal, **32** 67
in aerospace uses, **39** 1141
aging of vulcanizates, **39** 581
analysis, by gas chromatography, **39** 259
analysis of unsaturation, by ozonolysis, **34** 205
in asphalt, **37** 474
carbon black identification in, **40** 1323
chlorinated, for rocket seal, **39** 1233
creep and compliance, **36** 611
crosslinking efficiency in vulcanization, **38** 590
cut growth in ozone, **33** 1142; **33** 1156
displacement from fillers, **40**(1)xliv
dynamic properties, **37** 866
energy of deformation, **32** 40
failure envelope, **37** 792
fatigue, **37** 1341
friction, **37** 386; **37** 878
glass transitions, **31** 495
high temperature cure, **34** 571
hysteresis and strength, **40** 815
injection molding, **40**(2)xiii
molecular weight distribution of, **38** 823
oxidation (review), **38** 1198
ozone attack, **35** 200
permeability and tire durability, **38** 158
photovulcanization, **32** 557
physical constants, **39** 132
in polyethylene blends, **37** 144
qualitative analysis, **37** 297; **37** 748
reaction, with ozone, **32** 257
reaction, with radiochlorine, **36** 1071
reclaim, **31** 202
reinforcement of, **37** 1013, 1034

in rocket seals, **39** 1215, 1233
self-diffusion and tack, **39** 217
solubility parameters, **37** 246
solvents, **40** 1170
solvent swelling, **32** 825
strength, **40** 694
stress relaxation, **33** 72; **38** 76
stress softening, **39** 597; **40** 28
tensile strength, **31** 27
thermal conductivity, **40** 36
thermal decomposition, **37** 937
vulcanization,
with peroxides, **38** 15
wtih phenolic resins, **33** 229
water absorption, **36** 621
water permeability, **39** 1298
Butyllithium polymerization, of butadiene, **33** 628
of isoprene, **33** 655
Butyl phosphite, as vulcanizate chemical probe, **40** 100
Bylaws, Division of Rubber Chemistry, **40**(1)xxiii

Calcium salts for neoprene heat stability, **37** 76
Calendar of technical meetings, **40**(1)xiv
Carbenes, reactions with rubber, **40** 934
Carbon black, see also Fillers, Reinforcement, Tensile strength
analysis, of oxidized, **35** 311
analysis in vulcanizates, **40** 238
as antioxidant, **38** 636
attrited, **34** 16
and bound rubber, **31** 369; **31** 374
chemistry of microstructure, **37** 1245
of surface, **31** 941
density of vulcanizates containing, **31** 505
dispersible, **37** 1006
dispersion, analysis, **34** 1134
color photos, **36** 115
and dynamic properties, **39** 365
and field emission in vulcanizates, **37** 348
and properties, **36** 115
displacement of elastomers on, **40**(1)xliv
effect, of distribution, on properties, **40** 371
on aging (in review), **39** 88
on antioxidants, **32** 1164
on benzothiazole disulfide vulcanization, **36** 863
on conductivity and modulus, **39** 915
on dielectric constant of vulcanized natural rubber, **31** 631
on fatigue, **39** 348
on ozone resistance, **31** 874
on rubber morphology, **37** 839
on rubber oxidation, **33** 60
on scorch, **35** 509
on slow relaxation, **36** 697
on swelling, **38** 943
on swelling of natural rubber, **35** 274
on swelling of rubber, **32** 825
on tearing resistance, **38** 700
on viscoelasticity, **35** 918
on viscosity, of SBR, **40** 463
on vulcanizate properties, **35** 581
on vulcanization, **40** 866
of EPT, **40** 569
free electrons in, **32** 107
interaction with elastomers (review), **38** 1070
with rubber, **40** 817
with rubber and sulfur, **31** 361
with sulfur, **32** 118
and internal field emission, **37** 348
latex masterbatching, **31** 147; **34** 1485
lithium aluminum hydride reduction of, **36** 729
modification, with radiation, **33** 796
and Mullins effect, **39** 591; **39** 1530
and natural rubber crosslink density, **35** 563
oxidation and structural model, **39** 1
oxidized, adsorption and infrared spectra, **35** 311
pellet hardness, **39** 1081
in polymer blends, **40** 350, 359, 371
reaction, with sulfur, MBT and TMTD, **34** 588
reflectance, **40** 1323
and particle size, **40** 1319
reinforcement of butyl rubber, **37** 1013, 1034
reinforcement of latex, **35** 848
in reinforcement of rubber, **34** 709
reinforcement in swollen rubber, **39** 1565
rubber interactions and bound rubber, **37** 1299
in SBR latex compositions, **31** 655
strain amplification by, **39** 799; **39** 814
and stress relaxation, **40** 829
structure effects, **34** 1141
structure,
and compression, **40** 1311
in hydrocarbon dispersion, **35** 877
and light scattering, **40** 919
in rubber, **36** 147; **38** 387, 677
at the surface, **31** 941
and tear resistance, **32** 1180
and wear, **34** 43
surface area, Harkins and Jura, **40** 1305
surface area, **37** 630
surface, chemistry, **31** 941
and swelling of vulcanizates, **37** 6; **37** 326
thermal conductivity, **40** 36
type determination, **40** 1323
unpaired electrons in, **33** 993
and vulcanizate freezing point dispersion, **37** 311
Carbon dioxide flow through rubber, **40** 1409
Carbon gel, **32** 1185
Carbon, rubber bonds, **31** 147
Carbon tetrachloride, swelling rubber in vapor, **40** 1166
Carboranesiloxane elastomers, **39** 1184
Carboxyl groups, in natural rubber, **31** 86
in rubber, polyvinyl chloride and rubber hydrochloride, **31** 436
Carboxylic elastomers, **30** 1347; **32** 321; **36** 568
crosslinking of, **36** 931
Carboxyl rubbers, stress relaxation, **39** 1625
Carcass fatigue in tires, **40** 1014
Carothers, W. H., biographical sketch of, **37**(1) xxviii
Catalysts, effect on ethylene and propylene reactivity ratios, **39** 241
for EPT polymerization, **40** 556
for isoprene polymerization, **37** 103
organometallic for butadiene-isoprene copolymerization, **37** 121
Cellophane, adhesion of, to rubbers, **31** 712; **34** 879
Cement mortars modified with SBR, **37** 758
Cement, rubber in benzene, **33** 798
CEPAR apparatus, **34** 765
Chain entanglement, **34** 285
Chain scission, see also Sol-gel, Stress relaxation, Degradation
during crosslinking, **34** 309
by milling, **34** 215
in peroxide vulcanization, **37** 904
Chain transfer in Ziegler polymerization, **34** 986
Charles Goodyear Medal, see Goodyear,
Chemical effects in fatigue cracking, **36** 399
Chemical modification and oxidizability, **36** 1043
of rubber, **31** 664
Chemical structure and transition temperatures, **36** 1303
Chemistry of carbon black and reinforcement, **30** 1400
of natural rubber production, **34** 378
Chloral reaction with polyisoprenes, **36** 1056; **34** 1054
Chlorobutyl rubber, processing, **35** 467
Chloroprene alkyllithium polymerization, **38** 991
dimers in thermal polymerization, **39** 1390
infrared spectrum of, **32** 628
Chlorosulfonated polyethylene, vulcanization of, **36** 882, 963
Chromatography, see also Analysis,
of acids, **34** 200
analysis of accelerator-sulfur mixtures, **35** 449
column in analysis of accelerators and antioxidants, **31** 953
elution of polybutadiene, **36** 502
gel-permeation, **38** 823
in polymer identification, **39** 248, 259
precipitation, **38** 802
rubber stationary phase, **36** 310

Cis-trans isomerization, see also Isomerization, Geometrical, Microstructure, **32** 718
of polybutadiene, **40** 1529
Coagulation,
mechanism, SBR latex, **32** 531
theory of latex, **40** 1246
Coatings, porous sprayed, **40** 1296
Cobalt, catalysts for butadiene polymerization, **35** 1066
octoate, in butadiene polymerization, **39** 508
Cohesion and adhesion, **31** 712
Cohesive energy density, see also Solubility parameter
of elastomers, **37** 246
glass transition and structure, **35** 558
and internal pressure of polymers, **39** 969
of poly(propylene oxide), **40** 1421
of rubber and polyisoprene, **40** 673
Colloid stability of SBR latex, **33** 535
Combustion analysis for copolymer composition, **33** 1132
Compatibility—see also Swelling, Solubility parameter
and adhesion of high molecular weight materials, **32** 519
and diffusion, **37** 1153
of elastomers, **36** 668
and filler dispersion, **35** 881
in polymer blends, **40** 324
of polymers, **31** 49, 244, 250, 257; **32** 87
of SBR and polybutadiene, **40** 359
Compliance, and creep, **36** 611
of rubber, **39** 397
Compounding, of *cis*-1,4 polybutadiene, **35** 546
use of reference standards, **34** 798
Compressibility of natural rubber, **37** 850
Compression, and shear modulus, **36** 675
stress-strain relations of rubber, **32** 1
Concentration and preservation of natural latex, **32** 1660
Conductivity, see also Resistivity
of black-loaded natural rubber, **37** 348
electrical, and modulus, **39** 915
of stretched elastomers, **35** 317; **39** 678
thermal, **39** 841, 858, 863
and crystallization, **39** 866
of polymers, **36** 75
of rubber, **39** 126
Configuration, see also Microstructure, Conformation, Stereoregularity
of diene polymers, **40** 1094
of polymer molecules, **36** 337
Conformation, of polydienes, **39** 14
of polymers, **33** 703
of stereoregular polydienes in the crystal state, **39** 14
Contact potentials and reinforcement, **36** 176
Contour integral, evaluation of tire, **40** 961
Contributors to rubber literature, **36**(3)xvii; **35**(5) xlv
Controlled polybutadiene structures, **32** 614
Copolymerization, of butadiene and isoprene, **37** 121
of butadiene and isoprene by butyllithium, **33** 623
Copolymers, alkyllithium catalyzed, **40** 590
analysis of, by DTA, **39** 1513
analysis of, by NMR, **40** 1200
chemical study of structure, **40** 411
composition, analysis by combustion, **33** 1132
glass transition temperatures of, **31** 459
melting and crystallinity, **40** 427
organized block, **40** 932
viscoelasticity of block, **40** 1105
Cord
adhesion to rubber, **32** 870, 898
failure in tires, **39** 1382
-rubber elasticity (review), **37** 1365
tensile testing of, **32** 898, 907
in tire reinforcement, **40** 271
and yarn, rubber models, **34** 1169
Cornering, forces in tires, **33** 158; **40** 271
side forces and slip in, **32** 490
Corona attack on polymers, **32** 1104
Corrosion cracking, **35** 437
Crack growth ISO DeMattia test, **34**(1)xxvii
Cracking, see also Cut growth, Fatigue, Ozone
by corrosive agents, **35** 437
by free radicals, **33** 78
groove, and polysulfides, **39** 1526
and reagglomeration, **36** 754
by ozone, **35** 411, 421
Cracks, in natural rubber, stress around, **36** 777
propagation of, in natural rubber, **35** 210
and strength of solids, **35** 178
Craig, D., obituary, **37**(4)xxxii
Creep—see also Relaxation, Stress relaxation
failure of SBR, **39** 923
and hysteresis, **31** 1
from indentation-time measurements, **36** 611
and ozone attack, **32** 346
and relaxation of natural rubber, **36** 377, 389
and stress relaxation, **35** 182
and tensile strength, **37** 808
of EPR, **37** 894; **39** 940
theory of, **40** 506
viscoelastic, **35** 1013
of vulcanizates at low temperature, **33** 1114
Critical solution temperatures, **40** 1
Crosslink density,
and breaking elongation, **39** 726
chemical, **40** 722
and deformation, **35** 839
effect of, on failure envelope, **40** 544
of elastomers, **38** 123
in filled vulcanizates, **40** 866
of polybutadiene, **32** 706
and swelling pressure, **40** 532
two network model, **40** 1060
Crosslinking—see also Aging, Swelling, Vulcanization, and individual rubbers
and dynamic properties of polybutadiene, **39** 905
coagents in EPR, **37** 229
degree of, **34** 279, 290, 301
during aging, **38** 374
effect of,
on creep, **31** 1
on second-order transitions, **35** 776
on slow relaxation, **39** 870
efficiency of sulfur, **35** 105
exchange,
in relaxation, **39** 1640
in vulcanizates, **32** 696
formation, in MBT-accelerated stocks, **37** 679
kinetics, **37** 698
of oriented molecules, **40** 650
of oriented rubber, **31** 98
by radiation, **33** 1072
and relaxation of natural rubber, **39** 897
and scission in aging, **34** 922
and scission by radiation, **33** 476
and strength properties, **40** 694
and stress relaxation, **39** 1634
and stress-strain properties, **40** 1560
structure of,
in accelerated vulcanization, **37** 673
in vulcanizates, **35** 113; **37** 673
in TMTD-ZnO-rubber vulcanizates, **33** 394
of yarn, and flatspotting, **40** 947
Crosslinks, wandering, **32** 696
Crystalline elastomers, fibrous structure on stretching, **37** 839
polymers, melting, **32** 1392
structure of cis polybutadiene, **33** 699, 732
transitions in polybutadiene, **39** 193
Crystallinity, and conformation of diene polymers, **39** 14
and diffusion in elastomers, **35** 166; **37** 1137
and infrared spectrum of EPR, **39** 226
and strain, **40** 788
Crystallites in carbon black, **39** 1
Crystallization, see also Freezing
of balata, **40** 1394
of copolymers, **40** 427
and crack growth, **35** 210
and dielectric loss, **33** 741
effect of strain, **40** 1381
of EP copolymers, **39** 940
of filled rubber, **35** 615
and melting by thermomechanical tests, **37** 134

of natural rubber, **38** 33,45,58; **39** 206; **40**(3) xxv, 458
in neoprene, **34** 668
on orientation, **40** 786
of polybutadienes, **33** 699; **37** 173; **40** 1529
of polyurethans, **38** 452
in rubber, **31** 519
under stress (natural rubber), **39** 685
temperature coefficient of, from thermal conductivity, **39** 866
of supercooled rubber, **37** 404
Cumyl peroxide vulcanization of natural rubber, **37** 904
Cure, see Vulcanization
Curing systems, fate of, during sulfur vulcanization, **37** 635, 650
and fatigue of natural rubber, **39** 785
Curometers, **37** 434
Curometer, Wallace-Shawbury, **36** 922
Cut growth, see also Apparatus, Failure, Fatigue, Ozone, ring effect of temperature, **32** 692
and fatigue, **38** 292
in natural rubber, **32** 477
of natural rubber in ozone, **39** 1053
of rubbers, **39** 348
of SBR, **31** 185
Cyclization, of diene polymers, **36** 1019
of natural rubber, **36** 588, 1005
Cyclized polybutadiene, **31** 415
Cyclized rubber structure, **37** 486
Cyclooctadiene, terpolymer with ethylene and propylene, **36** 988
Cyclopropane derivative, of rubbers, **40** 934

Damping, see also Dynamic properties, Loss modulus, Resilience, Viscoelasticity (review), **37** 1190
apparatus for measuring, **35** 937
through combinations of materials, **35** 798
in cyclic motion, **34** 527
with different prestresses, **33** 282
effect of strain, **35** 927; **39** 1421, 1428
flexural waves at audio frequencies, **34** 158
in mountings, **32** 1209
of natural rubber, **36** 432, 444; **39** 897
by open-cell foams, **39** 389
resilience, and molecular weight of polybutadiene, **40** 517
of rubberlike materials, **37** 370
and vibration, isolation, **39** 740
in vulcanizates, **36** 407
Deactivating effect, mechanism of, **31** 849
Deborah number, **40** 1111, 1126
of polymers, **40** 1426
n-Decane, swelling of rubber, **40** 673
Deformation
effect, on crosslink density, **35** 839
of rubber, **36** 59
Degradation—see also Aging, Oxidation
by chemical agents in solution, **34** 1212
of elastomers in solution, **31** 278
by hot mastication, **33** 91
by mechanical means, **34** 215
mechanical, of polymers, **38** 509
of polymer solutions, **33** 909
of natural rubber, **33** 51, 60, 72
end groups in, **31** 86
oxidative, **32** 759
of polybutadiene, by mastication, **38** 493
of polymers, **35** 1157
of rubber, by latex oxidation, **31** 425
shear, of polyisobutene, **38** 243
and stress relaxation, **39** 1640
thermal
of nitrile rubbers, **32** 748
of polyurethans, **40** 1212, 1230
of vulcanizates during aging, **34** 922
Dehydrohalogenation of PVC, **40** 177
Densichron, for carbon black studies, **40** 1319
Density, apparent, of carbon black, **40** 1323
of dissolved polymer, **40** 1281
of EP copolymers, **39** 940
of polymer blends, **31** 257
"Depolymerization" in reclaiming, **40** 217
Design of plastic and hard rubber structures, **39** 1065
Determination, of accelerators, **35** 665
of antidegradants, **35** 684
of free sulfur, **35** 498
of isoprene unit structures, **33** 587
of *p*-phenylenediamines, **35** 676
of rubber, **37** 733
Deuterio substituted diene polymers, sulfur vulcanization, **36** 219
Deuterium and polymer NMR, **40** 400
Dicyclopentadiene, in EPT, **40** 556
Devulcanization, **31** 202
and reclaiming, **31** 599
Diamine antiozonants, **34** 819, 828
Dibutyl—see butyl
Dicatechol borate, DOTG salt of, **33** 237
Dichroism, infrared, and stress relaxation, **40** 663
Dicumyl, see Cumyl
Dicyclopentadiene, analysis of, in EPT, **40** 936
effects of, on EPT structure, **39** 964
Dielectric loss, effect of crystallization on, **33** 741
Dielectric spectrum and stretching, **32** 1027
Diene polymers, conformation of stereoregular, **39** 14
Diene rubbers, **34** 176
vulcanization, with sulfur, **40** 849
Dienes in EPT, **40** 569
Diethyl-2-benzothiazolesulfenamide, **33** 361
Differential thermal analysis for microstructure determination in EPR, **39** 1513
of natural rubber crystallization, **39** 206
of polybutadiene melting, **39** 193
traces for blends, **40** 341
Diffusion, in adhesion, **33** 240, 748
in aging of polymers, **39** 88
and dissolution, **36** 1024
in elastomers, **37** 1065
of extender oils, **40** 1570
in natural rubber, **36** 642
and nodule formation, **37** 338
in polymers, **39** 1496
of rare gases in rubber, **40** 1156
self and inter-, **37** 1153
in silicone rubber, **36** 642, 651
and sorption in elastomers, **35** 153, 166
of sulfur, **31** 356; **33** 1015, 1029
in tires, **35** 621
during vulcanization, **32** 770
and tack in rubber, **39** 217
theory of adhesion, **33** 748; **34** 1188
Dihydropyridines, structure of, **36** 259
Diisocyanate-linked polymers, **33** 1092
Dilatancy, and flow, **40** 1505
of plastisols, **40** 1270
Dilation of natural rubber on stretching, **32** 428; **37** 615
Dilatometric determination of compatibility, **36** 668
Dilatometry, of elastomeric PVC, **34** 123
of elastomers, **37** 154
of polybutadiene, **38** 347
of polychloroprene, **40** 1071
and polymer transitions, **40**(3)xxv
Dimaleimides, crosslinking with, **35** 520, 528
Dimensions of polymer molecules, **36** 337
Dimers, in chloroprene polymerization, **39** 1390
Dimethyloctadiene, reaction with ozone, **36** 201
and vulcanization mechanism, **35** 633
Dimethylpentane, reaction with sulfur and peroxide, **35** 118
Diols, eneyne, copolymers with butadiene, **37** 774
Diphenylmethane, as model for vulcanization, **31** 762, 769, 773, 779; **33** 211, 217; **34** 648; **35**, 484, 451
Discoloration of PVC, **40** 177
Dispersion, of carbon black, **34** 1134
and vulcanizate properties, **36** 115
and dynamic properties, **39** 365
of fillers, estimation, by microscopy, **35** 250
in natural rubber, **35** 881
theory, **35** 819
and hardness of carbon black, **39** 1081
and tensile strength, **37** 826

Disulfides, analysis for, **40** 100
bond energy in, **35** 661
decomposition, **34** 334
determination, in vulcanizates, **40** 866
and nitrile rubber vulcanization, **36** 236
Dithiocarbamates, and aging, **32** 739
as antioxidants, **36** 887
formation in thiuram vulcanization, **31** 315
kinetics of vulcanization with, **31** 301
Dithioamines as vulcanizing agents, **32** 976
Divinylbenzene, in copolymers with styrene, **40** 476
Division of Rubber Chemistry, bylaws, **40**(1)xxiii
officers, history, **40**(1)xxxiii
technical paper policy, **40**(3)xi
Drying, theory of latex, **40** 1246
DTA, see Differential thermal analysis
Durability, of tires, **38** 832
Durometer, Shore A, **39** 1520
Dynamic behavior of rubber at high strain, **39** 328
Dynamic damping, **34** 158
Dynamic loss, temperature dependence, **36** 709
Dynamic modulus,
and loss, **36** 709
and prestress, **33** 282
at small amplitudes, **33** 272
and strain, **39** 1421, 1428
Dynamic properties, **34** 148
(review), **37** 1090
of black-loaded vulcanizates, **36** 432, 444
and black structure, **36** 147
of butyl rubber, **37** 1022
and crosslinking in polybutadiene, **39** 905
determination with an oscillating-disk rheometer, **36** 451
effect of dispersion, **39** 365
effect of radiation, **39** 1268
of elastomers, **30** 1202
of isoprene, butadiene copolymers, **37** 121
of natural rubber, **37** 336
of polybutadiene, **37** 427
of SBR, **32** 651
of stretched natural rubber, **35** 388
Dynamic strain in vulcanizates, **36** 407
Dynamic testing apparatus, **35** 937
rotary, **34** 790
tests
impact and rolling wheels, **34** 555
nonlinear stress-strain measurements, **34** 527
Dynamic vitrification and energy of activation, **34** 1201

Elastic contact and friction, **36** 64
Elasticity, see also Viscoelasticity
of cord in rubber, **37** 1365
effect of filler, **40** 801
and entropy, **40** 777
of natural rubber, **37** 606
of rubber (review), **31** 959; **38** 1039
of silicone gum, **40** 722
theory, **33** 763; **36** 1459
of tires, **40** 271
of thixotropic systems, **40** 1505
Elastic protein, resilin, **36** 90
Elastomers, see also specific polymers
adhesion, **34** 1188, 1190
adhesion and adhesives, **33** 1323
from basic monomers, **30** 1387
blends of, microscopy, **40** 1238
butyl rubber, properties, **32** 1475
compatibility with hydraulic fluids, **37** 246
competition for filler surface, **40**(1)xliv
controlled instability, **39** 1161
fibers based on polyurethans, **36** 719
fungus resistant, **39** 1338
heparin coating, **39** 1288
identification, by gas chromatography, **37** 741
in impact resistant polystyrene, **38** 1164
milling, theory, **40** 1126
in O-ring seals, **39** 1215
from polycarbonates, **39** 1008
resistant to rocket fuels, **39** 1215, 1222, 1233
segmented, **40** 1105
for temperature resistance, **39** 1175, 1178, 1184, 1200
thermal conductivity, **37** 841
for unusual conditions (symposium), **39**(4–2)
for use at high temperatures, **39** 1141
use, in the human body, **39** 1276, 1288, 1293
use, in reinforcing plastics, **39** 1019
use, in solid rockets, **39** 112
in vacuum, **39** 1127
vapor pressure over swollen, **40** 1159
water resistance, **39** 1308, 1328
Elastorelaxometer, **34** 165
Electrical changes, effect on fatigue, **33** 970
Electrical conductivity of filled stocks, **37** 848
and diffusion processes in adhesion, **33** 240
Electrical properties, of black compositions, **31** 631
of elastomers and related polymers (Review), **36** 1230
Electrokinetic potentials of latexes (Review), **31** 1105
Electron diffraction of natural rubber, **37** 333
Electron microscopy, see also Microscopy
criterion for reinforcement, **35** 250
of filled rubber, **35** 228, 335
of fillers in latex, **36** 156
in rubber research, **34** 697
Electron paramagnetic resonance, **33** 462, 469
and vulcanization, **33** 1005
Electron spin resonance and TMTD vulcanization, **34** 318
Electrons, in rubber-reinforcing carbon blacks, **32** 107
unpaired, in carbon blacks, **33** 993
Elongation at break and crosslink density, **39** 726
Elution chromatography, **36** 502
Emulsions,
freeze agglomeration, **36** 581
oil in oil, **40** 909
End groups of oxidized rubber, **31** 86
Energy, of breaking, **40** 1036
critical, for ozone cracking, **40** 635
density at break, **40** 815
of disulfide bead, **35** 661
storage and dissipation of, in macromolecules, **40** 1446
Entanglement,
effect, on stress strain properties, **39** 1489
of polyisobutylene, **40** 1492
in polymer flow, theory, **39** 1460
and polymer viscosity, **40** 522
and slow relaxation, **39** 897, 905
Entropy, of mixing polymer solutions, **40** 1
in polymer elasticity, **40** 777
EPR—see ethylene propylene rubbers
EPT—see ethylene propylene terpolymers
Ether, diffusion through silicone, **49** 928
Equivalent cures, **31** 562
Esters as neoprene stabilizers, **34** 869
Ethylene, analysis for, in EPR, **39** 226
copolymerization, **38** 599
copolymers and NMR, **40** 385
copolymer with vinyl acetate, **40** 149
effects in EPT synthesis, **40** 556
in terpolymers, **40** 569
Ethylene propylene rubbers, see also Polyolefin elastomers (Review), **36** 1583
analysis for ratio of combined monomers, **39** 226
in blends for ozone resistance, **40** 635
coagents in vulcanization, **37** 229
crystallinity of, **37** 134
crystallinity, creep, and infrared, **39** 490
diffusion of gases in, **39** 1496
fracture of, **40** 1049
glass temperature and composition, **38** 979
grafts, **39** 1667
infrared analysis, **39** 956
interaction parameters, **39** 149, 1451
microstructure, **38** 334
monomer reactivity ratios, **39** 241
oils and viscosity, **40** 734
oxidation of (in Review), **38** 1198
preparation, compounding, and properties, **35** 1101
radiation grafting, **39** 1617

radiolytic stress relaxation, **39** 982
self-diffusion and tack, **39** 217
structure by differential thermal analysis, **39** 1513
tensile strength, **36** 1
thermal degradation, **38** 674
vulcanization of, **35** 133
isocyanates in, **37** 927
with maleimides, **38** 352
with perhaloolefins, **39** 1094, 1105
with peroxides, **38** 22; **40** 149
with radioactive peroxide, **39** 521
vulcanizing agents, **35** 1083, 1091
water solubility, **36** 621
Ethylene propylene terpolymers, see also Polyolefin elastomers, **35** 1114, 1126, 1142
abrasion and strength, **39** 823
in aerospace uses, **39** 1141
compounding, **35** 1142, 1126
creep, **37** 894
crosslinking efficiency in vulcanization, **38** 590
cyclooctadiene, **36** 988
dicyclopentadiene in, **38** 620
structures of, **39** 964
for dynamic uses, **38** 967
entropy and elasticity, **40** 777
injection molding of, **40**(2)xiii
interaction with carbon black, **40** 817
interaction parameters, **37** 894
from nonconjugated dienes, **35** 1114
oil diffusion, **40** 1570
oils and viscosity, **40** 374
oxidation (in review), **38** 1198
solvents, **40** 1170
stability of, to heat and light, **39** 1347
stress relaxation of vulcanizates, **39** 1634
stress softening, **39** 597
synthesis, catalysts and solvents, **40** 556
synthesis and properties, **40** 569
tearing resistance, **38** 700
tensile strength, **37** 818
thermogravimetric analysis, **40** 445
unsaturation, analysis, **40** 936
reactivity, with propylene, **39** 241
EVA, peroxide vulcanization, **40** 149
Evaluation of abrasion and reinforcement, **35** 1276; **36** 313
Evaporation of polymers in space, **39** 1161
Extender oils, interaction parameters of, **37** 451
and viscosity, **40** 734
Extension and dilation, **32** 428
Extensometer, **30** 673
semiautomatic, **36** 68
Extruders, flow in axially-variable, **39** 418
Extrusion, and carbon black structure, **40** 1311
theory of polymer, **40** 1426

Fabric fatigue, **38** 832; **39** 1382
Fabrics, elasticity of, **37** 1365
in tires, **40** 271
Failure, see also Aging, Antiozonants, Fatigue, Flexcracking, Cut growth, Tensile strength
in biaxial stress, **40** 710
criteria of polyurethan propellants, **37** 511
envelope, **40** 694
envelope and crosslink density, **40** 544
mechanisms (review), **38** 1007
of SBR in creep, **39** 923
in strain and crosslinking, **40** 694
and tensile strength, **36** 1
Fatigue, see also Cracking, Cut growth, Groove cracking, Review on fracture, **38** 1007
and aging, Review, **39** 88
biaxial, **34** 506
of blends, **31** 49
of carcass cords, **40** 1014
cracking, chemical effects, **36** 395
and cut growth of SBR, **31** 185
effect of
cure in natural rubber, **39** 785
electric charge on, **33** 970
temperature, **32** 692
fabric, **35** 1382
and fillers, **39** 348
ISO tests, **34**(1)xx, xxvii
limit for rubber, **39** 349
mechanisms, **38** 248, 263, 278, 292, 301, 1382
of natural rubber, **32** 477
of nitrile rubber, **32** 454
of noncrystallizing rubber, **38** 301
of nylon cord, **39** 1382
phenomena, **33** 946
and polysulfide content in tires, **39** 1526
of rubber, **32** 454; **37** 1341; **38** 657, 661, 666
of SBR, **32** 454
of swollen rubbers, **32** 454
Fatty acids, complexes of, with accelerators, **39** 1115
Fibers
Elastomeric from polyurethans, **36** 719
rubber-covered, properties, **35** 949
Fibrous structure in rubber, **37** 839
Field emission
internal, in rubber, **37** 348
in vulcanizates, **36** 740
Fillers, see also Carbon black, Reinforcement, Silica
adhesion, to polymers, **40** 1337
dispersion, **35** 228, 250, 335, 881
effect on crosslinking, **35** 563; **40** 866
on diffusion in silicone rubbers, **36** 651
on fatigue, **39** 348
on polymer swelling, **35** 284
on relaxation, **36** 697
on stress strain properties, **40** 801
inorganic, **35** 833
interactions, with rubber, in latex, **31** 655
with vinylpyridine rubber, **36** 975
molecular theory of reinforcement, **35** 857
nonblack, **35** 284, 291, 335, 833
reinforcement with, **36** 325
spectra, **38** 219, 227
theory of random, **35** 819
theory of reinforcement, **40** 1330, 1337
thermal conductivity, **40** 36
Film formation from latex, **40** 1246
Fine particle reinforcing silicas and silicates in elastomers, **32** 1286
Finite elasticity theory, **36** 1459
First order transition—see Melting, Freezing
Fisher, H. L., biographical sketch, **36**(2)xix
Flammability and thermal degradation of polyurethans, **39** 461
Flatspotting, measurement of **40** 1139
and nylon crosslinking, **40** 947
and viscoelasticity, **40** 1139
of tires, **38** 999
Flexcracking, see also Fatigue, **38** 719, 730
apparatus, **37** 186
ISO DeMattia test, **34**(1)xx
Flory, molecular weight distribution theory, **40** 1084
Flow, cold, in impact polystyrene, **40** 1492
entanglement theory, **39** 1460
in extruders, **39** 418
nonnewtonian, of fluids, **40** 1505
nonnewtonian, of siloxanes, **40** 1483
of polymers and fillers, **35** 326
of polymer solutions, **39** 1411
Fluid-bed vulcanization, **36** 875
Fluorocarbon elastomers, **34** 1521
in aerospace uses, **39** 1141
fracture, **40** 1049
solubility parameter, **39** 253
strength, **40** 694
stress relaxation, **35** 182; **40** 621
tensile strength, **37** 792; **40** 544
thermal expansion, **37** 160
in seals, **39** 1200
Fluorocarbon polymers, fuel resistance of, **39** 1222
structure and NMR, **40** 385
TGA of, **40** 445
Foams,
elastic, mechanics, **36** 597
formation of urethan, **33** 1193, 1293
from NIR latex, **39** 755

stability, **31** 1142
stability of polyurethan, **37** 38
viscoelasticity of open-cell, **39** 389
Fractionation of graft polymers, **31** 58
at LCST, **40** 1544
Fracture, of amorphous polymers, **38** 263, 1007; **40** 1049
of elastomers, **38** 1007
high speed, **32** 13
of polymers, **34** 103; **40** 1036
of reinforced polymers, **38** 278, 1164, 1180
and stress strain properties of reinforced plastics, **39** 1019
surfaces on brittle materials, **33** 275
Free radicals, in carbon, **37** 107
in cracking of stressed rubbers, **33** 78
effect on polymers, **31** 278
in vulcanization, **33** 199
Freezing, to agglomerate latexes, **36** 581
of natural rubber, **39** 206
Freezing point, depression of gels, **33** 245
by swelling, **40**(1)xliv
in swelled cured rubber, **37** 311
of polybutadiene, **39** 193
Frequency, temperature, and strain as parameters, **39** 1421, 1428
Friction, **32** 490
and abrasion of rubber, **31** 982
abrasion, and tensile strength, **39** 823
apparatus, **35** 379
coefficient of, and rubber structure, **35** 371
lubricated, and hysteresis, **33** 119, 129, 142
on lubricated plastics, **33** 105
roads and tire, **40** 684
of rubber, **33** 158; **34** 461; **36** 365; **38** 112
adhesional theory, **39** 306
on dry surfaces, **34** 1162
on metal, **36** 64
on polished surfaces, **33** 1166
and slider shape on wet rubber, **33** 119
studies of, on rubberlike materials, **33** 1218
theory of dynamic, **39** 320
of tires, **33** 151
on wet roads, **40** 984
and viscoelasticity, **37** 386
and wear, **31** 925
on wet surfaces, **37** 878
Fuel tank sealants, **39** 1200
Fuels, effect on rubber seals, **39** 1215
Fungus resistance of polyurethans, **39** 1338

Garvey, B. S., Jr., Biographical sketch, **38**(3)xxix
Gas, chromatography, in analysis, **40** 238
in EPT analysis, **40** 936
identification of elastomers by, **37** 741
in polymer analysis, **39** 248, 259
and pyrolysis, **37** 297
diffusion in polymers, **39** 1496
permeability of rubber, **40** 1409
Gel, formation during mastication, **33** 940
in natural rubber, **36** 1024
Gel permeation chromatography, **38** 823
Geometrical isomerism—see stereoregularity
in polybutadiene, **37** 169
Glass, beads as, polyurethan filler, **40** 1337
bonding of, to elastomers, **38** 379
temperature—see transitions
transitions, **34** 668, 705
(in Review), **36** 1303
in blends of polymers, **36** 668; **40** 324
and crosslinking in fluorolefin polymers, **40** 544
of elastomers, **34** 1193
and orientation, **39** 1403
of polyethers, **39** 881
and properties of alkyllithium catalyzed polymers, **40** 590
transition temperatures,
butyl, SBR, polybutadiene, nitrile rubber, **37** 138
of copolymers, **31** 459
and frequency, **34** 1201
of isoprene butadiene copolymers, **37** 124
molar cohesion, and polymer structure, **35** 558
by NMR, **37** 268
in polyisobutylene, **31** 499
Glassy polymer reinforcement, **40** 1516
Globulization of rubber, **32** 539
Glycerol effect on cure, **34** 21
Goodyear, Charles, Medalists, **39**(1)xvii; **40**(1)xxxix
Medal addresses, N. Bekkedahl, **40**(3)xxv
Garvey, B. S., Jr., **38**(3)xi
A. E. Juve, **37**(2)xxiv
M. Mooney, **35**(5)xxvii
E. A. Murphy, **39**(3)lxxiii
J. C. Patrick, **39**(5)cl
W. J. Sparks, **36**(5)xxiii
W. B. Wiegand, **35**(4)xxiv
Grafting, see also mechanochemical reactions,
on EPR, **39** 1617, 1667
by latex polymerization, **33** 825
on natural rubber, **32** 799, 809, 1243
on oxidized natural rubber latex, **31** 430
on polybutadiene, **38** 655
radiation induced, **39** 1617
reactions induced by deformation, **33** 80
Graft polymers, **34** 215
analysis by ozonolysis, **31** 82
fractionation of, **40** 1553
fractionation of natural rubber, **31** 819
by mastication, **31** 58
with preset configurations, **31** 829
from PVC and rubber, **40** 1036
reinforcement of plastics with, **38** 1164, 1180; **40** 1516
Griffith, fracture theory, **40** 1036
Groove cracking—see also fatigue, cut growth, flexcracking, **38** 719
caused by reagglomeration, **36** 754
and polysulfides, **39** 1526
Gum rubber, tensile strength of, **36** 1
Gum vulcanizate, stress softening of, **40** 840
Guth and Gold relation, **40** 817
Gutta percha, isomerization of, **40** 1222
microstructure of, **39** 14
molecular weight of, **36** 488
oxidation in solution, **39** 530

Halides in vinylpyridine rubber, **35** 453
Hall of Fame, Rubber Science, **39**(3)lxxxix
Halogenated hydrocarbons, for vulcanizing EPR, **35** 133, 1091; **39** 1094, 1105
Hard rubber, design of structures, **39** 1065
heat of reaction, **36** 1059
infrared analysis, **32** 854
vulcanization, **32** 195
Hardening of natural rubber, **35** 889
Hardness, of carbon black pellets, **39** 1081
comparison of tests, **36** 82
effect of amines, **31** 425
and friction, **37** 878
ISO test, **31**(1)xxv
microtesting, **33** 876
as a measure of Youngs modulus, **31** 896
modulus, thickness, **39** 1520
of polyisobutylene, effect of temperature, **37** 365
Harries, C. D., biographical sketch, **34**(4)xxii
Heart valves, elastomers, **39** 1276
Heat capacity of rubbers, **32** 444
Heat, conductivity in elastomers, **39** 678
of dilution, EPT, **39** 1436
of formation, of TMTD and TMTM, **35** 661
of fusion, of polychloroprene, **40** 1071
generation in tires, **31** 1
of mixing of elastomers, **31** 250
resistance of neoprene, **37** 76
transfer in rubber, **40** 36
treatment and bond strength of tire carcasses, **32** 503
vulcanization, **31** 132
Helium diffusion in rubber, **40** 1156
Heparin, coating on elastomers, **39** 1288
Hevea, see Natural rubber
brasiliensis, breeding of, **34** 413
Hexafluoroethylene, vinylidene fluoride copolymer, tensile strength, **40** 544

Hexane, determination of surface area of carbon black with, **40** 1305
High speed, fracture in rubber, **32** 13
stress strain curing, **36** 50
tensile testing of rubber, **35** 813
High temperature, cure, **34** 571
elastomeric compounds and polymers, **32** 1587
vulcanization, **34** 319
Historical summary, Division of Rubber Chemistry, **40**(1)xxxiii
Howland, L. H., biographical sketch, **37**(4)xli
Huggins constant, see Interaction parameter
Hydrazides, as blowing agents, **39** 211
Hydrides, as blowing agents, **39** 211
Hydrocarbons, diffusion of aliphatic, in rubber, **35** 166
Hydrochloric acid evolution from PVC, **40** 177
Hydrogen, and crosslinks in radiation curing, **34** 735
disulfide in vulcanization, **31** 353
peroxide reaction with rubbers, **32** 231
sulfide evolution during vulcanization, **31** 769
Hydrogenated natural rubber as infrared analytical standard, **39** 226
Hydrogenated polybutadiene as bonding agent, **35** 1060
Hydrogenation, of *cis*-1,4-polyisoprene, **35** 1063
of polybutadiene, **31** 156,588; **35** 1052
Hydrolysis, of polyurethans, **39** 1308,1328
and relaxation of silicone rubber, **40** 629
Hydroperoxides of atactic polypropylene, **36** 532
"Hydrosolution" masterbatching, **39** 553
Hydroxylated polyolefin rubbers, **31** 446
Hypalon, **36** 882
analysis for, **37** 301
crosslinking of, **36** 963
Hysteresimeter, **34** 347; **36** 1107
Hysteresis, see also Dynamic properties, Damping
and tensile strength, **40** 815
and lubricated friction, **33** 129,142
relaxation and creep, **36** 377,389
in skidding resistance, **33** 151
in tire wear, **33** 857

Identification, see also Analysis
of elastomers, **36** 1129
of polyisoprene, **33** 591
of polymers by mass spectrometry, **36** 794
Immersion, heat of, and surface area, **40** 1305
Impact, resistance and stress strain properties, **39** 1019
Impact resistant polymers, **38** 1164,1180; **40** 909
Impact strength (reviews), **38** 1164,1180
Indentation, and creep, **36** 611
failure of elastomers, **37** 14
and puncture of rubber vulcanizates, **34** 937
Indenter,
hardness and modulus, **39** 1520
hysteresimeter, **36** 1107
Index of Rubber Reviews and authors, **39**(1)xxxvii
Infrared, see also Near-infrared,
analysis of unsaturation, **40** 936
of butadiene polymers, **33** 639
of natural rubber, **33** 975,982
of polybutadiene, **39** 945
determination, of E/P ratio, **39** 226
dichroism and stress relaxation, **40** 663
identification of rubber, **32** 854
spectra and copolymer structure, **40** 427
of diene polymers, **35** 57
of EPR, **38** 334
and EPR properties, **39** 940
of isomerized rubber, **40** 921
of oxidized black, **35** 311
of polychloroprene, **38** 532
in polymer analysis, **40** 238
of rubber, **32** 628
for rubber identification, **36** 1129
study of rubber and sulfur, **33** 208
of vulcanization, **31** 719; **37** 652
Inhibition, of hardening of natural rubber, **35** 889
Inhibitors of fatigue, **33** 946
Initiation of radical processes, **32** 244
Injection molding of rubber, **37** 88; **40**(2)xiii
Inorganic fillers, in vulcanizates, **35** 833
Instructions to authors, **40**(1)xviii
Instrumental methods for the analysis of polymeric materials, **34** 1553
Instruments, see Apparatus
Interaction parameters, **40** 1,817
(Review), **39** 149
n-decane and rubber, **40** 673
of elastomers, **37** 446
EPR, **39** 1451
EPT, **37** 894
of extender oils and elastomers, **37** 451
natural rubber, **37** 326; **40** 1159
of rubber and solvents, **31** 691
in rubber solutions, **32** 668
Intermolecular action and dynamic fatigue, **32** 454
Intermolecular forces and chain flexibilities, **36** 1000
Internal energy and elastic force, **36** 351
Internal field emission in black loaded vulcanizates, **36** 740; **37** 348
Internal pressure and CED, **39** 969
of polyethylene glycol, **36** 1000
Internal rupture in rubber cylinders, **34** 925
Iodine chloride reaction with polybutadiene, **31** 569
Iodine, radioactive for abrasion rating, **40** 969
Iodometry of EPT, **40** 936
Ionic elastomers, **30** 1347,1387
Ionizing radiation and elastomers, **33** 1375
Irradiation of rubber and styrene, **32** 1243
ISO, recommendations for tests 1957, **31**(1)xiv
Isocyanate, adhesives, **32** 67
in EPT vulcanization, **37** 927
and isocyanate derivatives, high temperature reactions, **32** 337
Isomerization, **32** 718,1036
of natural rubber, **33** 985
of polybutadiene, **35** 536,618
of polyisoprenes, **33** 445; **40** 921,1222
Isomers, conformation of geometrical, **39** 14
Isoprene, alkyllithium polymerization of, **34** 191
butadiene copolymers, **33** 623
butyllithium polymerization of, **33** 610
chain transfer in Ziegler polymerization, **34** 986
polymerization of, **33** 971
with alkyllithiums, **39** 491
to *cis*-polyisoprene, **31** 838
by organometallic compounds, **33** 655
with $TiCl_4$-trialkylaluminum, **33** 689,696
reaction of with hydrogen disulfide, **31** 353
synthesis of radioactive, **34** 991
thermodynamic properties of, **39** 143
Ziegler, copolymerization with butadiene, **37** 121
polymerization of (in review), **36** 1571
polymerization, **37** 103
Isotactic, see stereoregularity, **39** 14

"Jump" reaction, **40** 895
Juve, Arthur Edgar, obituary, **39**(1)xxv

Katz, Johan Rudolf, biographical sketch, **39**(3)xcii
Kinetics of adsorption of macromolecules, **39** 36
of cut growth in vulcanizates, **32** 692
of polymerization, **34** 904
of reaction of sulfur with cyclohexene, **31** 1077
of rheology, **35** 1013
of siloxane polymerization, **40** 769
sulfur vulcanization, **40** 769
of vulcanization, **34** 1306; **37** 557; **40** 849
KOH number, ISO test, **34**(1)xvii
Krypton diffusion in rubber, **40** 1156

Labeling, isotopic, of oil fractions, **40** 1570
Laboratory abrasion and road testing, **31** 387
Lambourn, see apparatus, abrasion resistance
Langmuir adsorption isotherm, **39** 36
Latex, addition, to asphalt, **37** 1049
aging, effect of silica, **34** 834
agglomeration by freezing, **36** 581
analysis, for rubber, **37** 736
coagulation of SBR, **32** 531
coalescence of SBR, **40** 1246

as a colloidal system (Review), **32** 1627
creaming, **38** 233
foam from NIR, **39** 755
history, **39**(3)lxxiii
masterbatching, **31** 147; **34** 1485
compared with solution, **39** 553
microscopy of filler-reinforced, **36** 156
oxidation (Review), **38** 1214
of natural rubber, **31** 425,430,436
of synthetic, **31** 262
particle size, **34** 1228
distribution, **34** 433
polymerization, **33** 825
preservation (Review), **32** 1660
reinforcement by radiation, **35** 848
rheology of, **32** 1050
SBR, **33** 535
stability of (review), **31** 1105
study of, by the electron microscope, **35** 1028
surface tension, **38** 170
swelling of, **32** 809,814
synthetic (review), **34** 1501
Light, effect of, on rubber aging, **39** 88
scattering, of carbon black, **40** 919
and melting of polychloroprene, **32** 463
and molecular weight of polybutadiene, **36** 488
of polyisoprenes, **34** 446
stabilization of neoprene, **34** 856
Liquid chromatography **36** 310
Liquid crystals, of block polymers, **40** 1526
Literature, most prolific authors, **39**(2)liv
Lithium alkyls, block polymers with, **40** 1183
in polymerization, **38** 627,863
styrene and butadiene polymers with, **40** 590
Lithium aluminum hydride, as blowing agent, **39** 211
reduction of in carbon black, **36** 729
for sulfur group analysis, **36** 863
in vulcanizate analysis, **40** 100
Load deflection and surface strain, **31** 395
Lorenz-Lorentz rule, **40** 1281
Loss modulus and energy losses in tires, **38** 400
Low and high damping rubbers in combination, **35** 798
Low temperature properties of natural rubber, **33** 1
Lower critical solution temperature, **40** 1544

Macromolecules, adsorption from solution, **39** 36
flexibility and shape, **36** 337
Macroradicals, in mechanical degradation, **33** 942
in polymerization and degradation, **33** 469
Magnesium, oxide, in vulcanization, **31** 526
silicate reinforcement of fluoroelastomers, **39** 1141
Maleic anhydride, polybutadiene reaction, **36** 803
reaction, with rubber, **31** 664; **36** 282,284
Maleimides, crosslinking with, **35** 520,528; **38** 352
Mallory tubes and cord fatigue, **40** 1014
Mark and Houwink relation, **40** 806
Mass spectrometry and polymer analysis, **36** 794
Mastication, see also degradation
and degradation of natural rubber, **33** 91
and gel formation, **33** 940
of natural rubber, **31** 73
of natural rubber, cold, **36** 102
of natural rubber, in nitrogen, **35** 896
of polybutadiene, **38** 493
power consumption during, **33** 868
of rubber-poly(methylmethacrylate) blends, **31** 58
MBT, see Benzothiazolinethione
MBTS, see Benzothiazyl disulfide
Mechanical behavior of nitrile rubber, **32** 434
Mechanical breakdown, energy requirements, **33** 909
of natural rubber, **31** 348
of polystyrene, **34** 474
theory of, **34** 466
Mechanical damping of rubberlike materials, **37** 370
Mechanical properties, **31** 1
of propellants, **37** 524,542
of propellants, polyurethan, **37** 511
Mechanics of ozone cracking, **35** 200
Mechanism, of abrasion, **37** 291
of "devulcanization", **31** 202
of sulfur interaction with mono-olefins and 1,5-dienes, **31** 1090
of vulcanization, **32** 174
Mechanochemical, blending, see also Mechanical, **33** 457
degradation of natural rubber, **36** 102
modification, **33** 923
of polybutadiene, **36** 803
phenomena, **33** 959; **36** 473
in SBR, **36** 480
reactions, see also mastication, fatigue, **33** 80, 942,964; **34** 466,474
and reinforcement, **33** 929; **34** 748
transformations, **34** 215
Medal, Charles Goodyear, **39**(1)xvii; **40**(1)xxxviii
Meeting calendar, **40**(1)xlv
Meetings, Division of Rubber Chemistry, **40**(1)xxxiv
Melting, and crystallization, see also Crystallization, **32** 463, 1005
of polychloroprene, **40** 1071
of polymers, **32** 1392
of natural rubber, **39** 206
points, determination, by beta ray absorption, **36** 459
of polybutadiene, **39** 193
of polyisobutylene, **31** 499
of racked rubber, **31** 485
and strain, **40** 788
Mercaptan adducts, properties of natural rubber, **31** 519
Mercaptans, addition of, to SBR, **31** 213
as reclaiming agents, **40** 217
Mercaptobenzimidazole, **31** 849
Mercaptobenzothiazole—see Benzothiazolinethione
Metals, effect of, on aging, **39** 88
Metal halides in vinylpyridine rubber, **35** 453
Metal ions, suppression of oxidation catalysis, **36** 541
Metal oxides, as activators, **31** 526
reaction with polysulfide rubbers, **31** 624
in TMTD vulcanization, **33** 394,412
in vulcanization, **32** 150
Methacrylate polymers for controlled instability, **39** 1161
Methacrylates, polymerization in latex, **33** 825
Methyl iodide reaction with organic sulfides, **32** 208
Methyl methacrylate, acrylonitrile copolymers, viscosity of, **40** 522
fractionation of grafts on rubber, **40** 1553
grafting on natural rubber, **31** 430
grafting, radiation, **39** 1617
polymerization in natural rubber, **32** 799, 809
pentenes, isomerization, **40** 921
Mevalonic acid, in biosynthesis, **40** 679
Microgel, removed with calcium sulfate, **36** 488
Microhardness testing, **33** 876
Microscopy, see also Electron microscopy,
of blends, Symposium, **40** 323
of blends, **40** 350
techniques, **40** 359
of elastomer blends, **40** 1238
electron, **34** 697
for molecular weight determination, **39** 567
of filler dispersion, **35** 228
of ozone resistant blends, **40** 635
of pigment-elastomer systems (Review), **36** 1175
of rubber latex, **35** 1028
sample preparation, **36** 799
Microstructure, see also Carbon black, Differential thermal analysis, Individual polymers, Infrared, Stereoregularity
of alkyllithium polymers, **39** 491
of carbon black, **37** 1245
chemical studies, **40** 411
of copolymers, **40** 427
of diene anionic polymers, **40** 883
determination by DTA, **39** 1513
of EPR, **38** 334; **39** 956
of EP dicyclopentadiene terpolymers, **39** 964
and infrared analysis of EPR, **39** 226
by NMR, **40** 385,400
of polybutadiene, **39** 945; **40** 12
of polychloroprenes, **38** 532

of polydienes, **38** 863
radiation and polyisoprene, **39** 992
Microtome, **36** 514
Migration, see Diffusion
Milling, of elastomers, **40** 1126
MBT in, **32** 184
reaction of MBT during, **31** 751
Miscibility of polymers, **32** 87
Mixers, internal, for small rubber samples, **31** 667
Mixing, mixtures, see also Blends
and filler dispersion, **36** 115
and polymer flow, **37** 503
with the Rotomill, **33** 98
and scorch, **32** 295
of polymers, **40** 1119
Model compounds, see also Vulcanization, **31** 773
Models, of geometrical isomers of polymers, **39** 14
of rubber, **34** 1169; **37** 199
Modulus, determination, from indentation hardness, **36** 611
effect of curing system on, **39** 1359
entanglements, **39** 1489
strain on dynamic, **39** 1421, 1428
hardness, thickness, **39** 1520
and molecular weight of polyurethans, **39** 1089
of rubber in flat pads, **31** 395
temperature dependence of, **33** 763
Mold release agents, **36** 1148
Molding, injection, of rubber, **40**(2)xiii
microporous parts, **33** 1193
Molecular ordering in polymers, **34** 953
packing in crosslinked rubber, **35** 906
refraction of polysulfides, **31** 815
sieves in vulcanization, **37** 714
structure, of butadiene isoprene copolymers, **37** 121
of polybutadiene, **37** 408
of polyisoprene, **37** 112
and vapor permeability, **39** 751
theory of reinforcement, **36** 1081
view of fracture, **38** 1007
viscoelastic theory (Review), **36** 1422
Molecular weight, absolute, determination for linear high polymers, **32** 99
and adsorption of macromolecules, **39** 36
of alfin rubbers, control, **38** 103
analysis by elution chromatography, **36** 502
and density of polyisoprene, **36** 1042
determination, from concentrated solution viscosity, **32** 99
by direct observation, **39** 567
of, by electron microscopy, **35** 908
distribution, **38** 802, 823
of EPTs, **40** 569
of polybutadienes, **40** 1529
of polyisoprene, **33** 689
of polymers, **33** 669; **34** 453
and properties, **40** 590
and relaxation spectrum, **40** 493, 470
of siloxanes, **40** 1084
and swelling pressure, **40** 532
and dynamic properties, **32** 651
effect, on adhesion of rubber, **31** 712
blending on distributions, **38** 539
on vulcanization, **31** 592
and entanglement viscosity, **40** 522
of natural rubber, **39** 99
of natural rubber after mastication, **31** 73
osmotic, of polybutadiene, **36** 488
of polyester and urethan modulus, **39** 1089
and relaxation spectra, **40** 493, 1470
resilience and damping of polybutadiene, **40** 517
review of analytical methods, **40** 238
and viscosity, **40** 806
of polyisoprene, **36** 1035
of SBR, effect of mastication on, **38** 961
Monolayers in hydroxylated rubbers, **31** 446
Monsanto rheometer, description of, **36** 451
Mooney and Rivlin relation, see also Stress strain, viscoelasticity, **32** 1; **36** 59; **40** 16, 817
significance of C_2 in, **33** 254
Mooney viscometer, multispeed, **39** 436
Mountings, **32** 1209
Mullins effect, see also Stress softening, **34** 493; **35** 259, 839; **39** 597
in blends, **40** 350
in gum stocks, **39** 799
in nitrile rubber, **34** 959
variables in, **39** 1530, 1544
Multispeed viscometry, **38** 769

Nairit, **32** 519
Natural latex, as a colloidal system, **32** 1627
preservative and concent ratio, **32** 1660
oxidation, **38** 1214
Natural rubber, **32** 67
abrasion, **37** 291; **38** 457
abrasion and strength, **39** 287, 823
abrasion, in tires, **31** 166
absence of 3, 4 addition, **33** 982
absence of free-radical cracking, **33** 78
adhesion, to polymers, **35** 794
addition of olefins, **36** 282
adsorption, **39** 36
aging, **38** 374; **39** 1577
aging of TMTD vulcanizates, **31** 327
analysis, for sulfur groups, **32** 941
attack, by chemical agents, **34** 1212
benzothiazolyl disulfide accelerated vulcanization, **36** 863
and benzoyl peroxide, **39** 768
in binary systems, **32** 87
biosynthesis stereochemistry, **40** 679
birefringence of, **38** 1115; **39** 1436
in blends, **31** 49; **38** 62; **40** 324, 1238
blend microscopy, **40** 371
in blends with polybutadiene, **32** 308
bound rubber from, **35** 599, 611
branching, **36** 807
breeding, **34** 413
bulk polymerization in, **32** 799
carbon black identification in, **40** 1323
carbon black structure, **36** 147; **38** 387
carbon gel, **32** 1185
chain scission, **37** 904
chain density, **40** 1560
chemical effects in fatigue, **36** 399
as chromatograph stationary phase, **36** 310
cis, trans isomerism, **40** 921
competition with nitrile rubber for filler, **40**(1) xliv
compliance, **39** 397
compressibility, **32** 428; **37** 850
compress ion and shear modules of, **36** 675
conductivity of filled stocks, **39** 915
crack growth, **35** 210
creep of pure gum vulcanizates, **36** 611
crosslinking, of oriented, **31** 98
crosslinking as processing aid, **33** 810
crosslinking, and second-order transitions, **35** 776
crystallite growth, **39** 206
crystallization, **35** 615; **37** 333, 404; **38** 58; **40** 458, (3)xxv
crystallization of modified, **31** 519
crystallization rate, **40** 1381
crystallization, under strain, **38** 45; **39** 685
cut growth, **32** 477; **38** 292, 719, 730; **39** 348, 1053
cut growth, in ozone, **33** 1142, 1156
cyclization, **36** 1005, 1019
cyclized, structure of, **36** 558
degree of crosslinking, **34** 301
differences in peroxide cured, **35** 166
diffusion of solvents, **36** 642
dithiocarbamate accelerated vulcanization, **31** 301
dynamic properties, **32** 662; **36** 407, 709
of filled, **36** 432
at high strain, **39** 328
effect of carbon on crosslinking, **35** 563
of fillers, **35** 590
of fillers and waxes on ozone resistance of, **31** 874
of gamma radiation on, **32** 785
of temperature on abrasion, **31** 650
efficiency of thiuram disulfide vulcanization, **31** 559

elasticity and thermodynamics, **37** 606
electrical properties during vulcanization, **31** 631
  resistance of black-loaded vulcanizates, **37** 348
  resistivity on stretching, **35** 317
end groups, **31** 86
energy of deformation, **32** 40
entropy elasticity, **40** 777
failure of bonded units in tension, **31** 393
failure envelopes, **37** 792
  fatigue, **33** 946; **36** 473, 480; **38** 666
  and curing system, **39** 785
fibrous structure, **37** 839
in flat pads, **31** 395
freezing point depression in, **37** 311
friction of, on polished surfaces, **33** 1166
gas permeability, **40** 1409
and gel, **36** 1024
glass transition, **34** 1193, 1201
globulization, **32** 539
graft copolymers, **31** 430, 829
  ozonolytic degradation of, **31** 82
gum stress-strain curves, **32** 1305
hardening, inhibition, **35** 889
heat capacity, **32** 444
heat of transport of rare gases, **40** 1156
heparin coating, **39** 1288
high speed tensile failure, **32** 13
high temperature cure, **34** 571
hot mastication and degradation, **33** 91
hydrochloride from latex, **31** 436
hydrogenated, **35** 1063
hydrogenated, or infrared analytical standard, **39** 226
by stress and strength, **40** 815
infrared analysis, **32** 854
  dichroism, **40** 663
  spectrum, **32** 628
  study of vulcanization, **31** 719
injection molding, **40**(2)xiii
interaction parameters, **37** 446; **39** 149
internal energy, **36** 351
internal rupture, **34** 925
isomerization, **32** 718, 1036; **40** 1222
  with alkyl aluminums, **33** 985
kinetics of vulcanization, **33** 335
latex, polymerization in, **33** 825
  products history, **39**(3)lxxiii
  reinforcement, **35** 848
  vulcanized with TMTD, **34** 839
light scattering, **34** 446
low temperature creep, **33** 114
mastication, and gel, **33** 940
  in nitrogen, **35** 896
mechanical degradation, **38** 509
mechanical properties, **31** 1
metal-ion catalyzed oxidation, **36** 541
microstructure, **38** 90; **39** 14
mill breakdown and vulcanization, in presence of MBT, **31** 348
milling and reaction of, **33** 923, 929
mixtures, with poly(methyl methacrylate), **31** 58
modification, and oxidizability, **36** 1043
  with maleic anhydride, **31** 664
  with thiol acids, **33** 1
modulus and loss factor, **34** 148
molecule, size and form, **35** 908
molecular weight, **37** 99
  and solution viscosity, **40** 806
morphology in films, **38** 33
Mullins effect, **35** 839; **39** 1444
  in gum, **39** 799, 814
NMR spectra, **36** 315, 318
oil diffusion in, **40** 1570
oil extended, **39** 1656
optimum cure of, **32** 562
oxidation, **33** 51, 60; **38** 1198
  of latex, **31** 425, 430, 436; **38** 1214
  in solution, **39** 530
ozone attack, **35** 200
  resistance, apparatus for testing, **31** 866
  resistance of gum stock, **32** 346
  resistant blends, **40** 635
peroxide vulcanization of, **37** 904; **38** 367; **40** 149
p-phenylenediamine in, **34** 816
photoelasticity of (Review), **38** 1115
photooxidation of, **33** 433; **34** 919; **39** 537
physical constants, **39** 132
plasticity retention index, **39** 1608
polymer extraction from, **40** 1553
polymerization of styrene in, **32** 1243
production, chemistry (Review), **34** 378
properties of solutions, **33** 921
properties of stretched, **35** 388
proton magnetic resonance, **37** 268
radiation effects, **34** 250; **39** 992
radiation vulcanization of, effect of additives on, **31** 737
reaction, with accelerators, **38** 204
  with benzethiazolinethione, **32** 184; **35** 671
  with oxygen during cold mastication, **36** 102
  with ozone, **32** 269, 278
relaxation of, peroxide vulcanizate, **36** 50
resin vulcanization, **36** 268
rheology of solutions, **32** 1039
in road bitumen, **37** 457
scission during aging, **34** 922
  during crosslinking, **34** 309
  and crosslinking by electron radiation, **33** 1072
self-diffusion and tank, **39** 217
shear compliance, **39** 397
with silica filler, **34** 729
skid resistance, **38** 112; **40** 25
slow relaxation, **39** 870, 897
solution viscosity, effect of piperidine on, **37** 477
solvent swelling, **32** 825; **38** 940, 943
specific volume during elongation, **31** 513
strength, **40** 694
stress relaxation, **32** 759; **33** 72; **35** 182; **39** 1640
  and dithiocarbamates, **32** 739
  at large strain, **36** 697
  of radiation vulcanizates, **34** 910
stress softening of, **39** 597; **40** 840
stress strain behavior, **32** 394
structure, **34** 423
  and NMR, **40** 385
sulfenamide vulcanization of, **38** 176, 189
sulfur vulcanization, **37** 910
swelling, of filled vulcanizates, **35** 274
  of latex, **32** 809
  and modulus, **40** 673
  and strength, **31** 756
  pressure and crosslink density, **40** 532
  in vapor, **40** 1166
  and vapor pressure, **40** 1159
and synthetic polyisoprenes, **39** 1593
synthesis, **38** 450
tack, **32** 48; **38** 689
tear strength, **32** 1180; **34** 57, 66, 76, 85; **38** 700
thermal conductivity, **39** 126; **39** 841; **40** 36
thermal decomposition, **37** 937
thermal oxidation, **33** 423
thermal vulcanization, **31** 132
thermodynamic melting temperature, effect of strain, **32** 1005
thermodynamic properties, **39** 143
thermodynamics of benzene solutions, **33** 798
thermodynamics of solvent-rubber systems, **38** 314, 325
thiuram vulcanization, **32** 139
TMTD vulcanization, **34** 318, 795
transition temperatures, **40** 788
ultraviolet aging, **34** 686
unsaturation during reaction with sulfur, **33** 208
variability, tree-to-tree, **32** 1228
in vibration damping, **39** 740
viscoelastic stress relaxation, **37** 617
viscoelasticity, **39** 408
volume changes, on stretching filled vulcanizates, **31** 505
vulcanizates analysis, **40** 100
vulcanizate, structure, **35** 113; **36** 547
vulcanization, **36** 597, 835; **38**(1); **39** 1359
  with azo compounds, **32** 544
  of filled, **40** 866

to hard rubber, **32** 195
kinetics, **31** 286; **37** 557; **40** 849
mechanism, **35** 633
of oriented, **31** 469; **40** 650
rate, measurement, **31** 105
rate with MBT, **31** 117
with nitrosohydroxylamine salts, **35** 141
with thiuram disulfides, **31** 315, 539; **32** 566, 721
water solubility, **36** 621
wet friction, **37** 878
Nitrile rubber (Review), **37**(3)
abrasion resistance, **39** 287
and strength, **39** 823
on wire gauze, **32** 471
adhesion, to cellophane, **34** 879
to polymers, **35** 794
to surfaces, **34** 562
aging, **33** 502
analysis for, **37** 301, 733, 756
by gas chromatography, **39** 259
biaxial strength, **40** 710
in binary systems, **32** 87
in blends, **31** 49; **40** 324
competition for filler, **40**(1)xliv
with polyvinylchloride, **35** 716, 726; **37** 770
bonding of to metal, **32** 67
dynamic properties, **32** 662; **36** 407, 709
at high strain, **39** 328
energy of deformation, **32** 40
fatigue, **37** 1341
friction, **37** 386
on polished surfaces, **33** 1166
on steel, **36** 365
glass transitions, **32** 434; **34** 1193, 1201
hysteresis and strength, **40** 815
in impact resistant polymers (Review), **38** 1164, 1180
infrared spectra, **32** 628, 854
interaction parameters, **37** 253; **39** 149
isoprene latex foam, **39** 755
MBT vulcanization, **37** 679
mechanical modification, **33** 964
oxidation, **33** 790; **35** 700
ozone attack, **35** 200
ozone cracking, oxygen free, **37** 583
ozonolysis, **34** 200
peroxide vulcanization, **37** 910; **38** 573
properties of solutions, **32** 668
in radiation field, **39** 1258
in rockets, **39** 112
with shellac, **39** 763
solvent swelling, **32** 825
and solubility parameter, **37** 246
in sprayed coatings, **40** 1296
sulfur vulcanization, **32** 128
swelling, **34** 964; **35** 257
and strength, **31** 756
tack, **32** 48
thermal conductivity, **40** 36
thermal degradation, **32** 748
thermal expansion, **37** 138; **39** 408
thermal vulcanization, **31** 132
thiuram vulcanization, **31** 539
vulcanization of with sulfenamides, **33** 846
vulcanization with sulfur and DPG, **33** 834
water solubility, **36** 621
Nitrogen, adsorption on non-porous black, **37** 630
diffusion in polymers, **39** 1496
dioxide, use to isomerize rubber, **35** 618
Nitroso amines, as vulcanizing agents for neoprene, **35** 141
Nitroso compounds as vulcanizing agents, **34** 658
Nitrosodiphenyl amine as retarder, **35** 501
Nitroso rubbers, **39** 481
N,N'-dinitroso-p-phenylene-bis(hydroxylamine) salts, **35** 141
Nobel Award Address, Natta, G., **38**(1)xxxvii
Ziegler, K., **38**(1)xxiii
Nodule formation in tire stocks, **37** 338
Nordel, See also Ethylene propylene terpolymer, **35** 1114, 1126, 1142
Normal stresses in solution, theory, **39** 1460
NRPRA publications, to 1960, **33**(2)xiv, (4)xvii
Nuclear magnetic resonance, **38** 90
in analysis, **40** 238
analysis of copolymers, **40** 1200
and antiozonant activity, **39** 1584
and copolymer structure, **40** 427
spectra of polyisoprene, **36** 315
and protein structure, **40** 385
studies of elastomers, **34** 1574; **38** 517
of natural rubber, **36** 318
of polychloroprene, **38** 532
Nucleation of crystals by orientation, **40** 786
Nylon, adhesion, to rubbers, **34** 879
crosslinking and flatspotting, **40** 947
fatigue in tires, **38** 832
flatspotting, **40** 1139
tire and fatigue, **39** 1382
Natta-Ziegler catalysts, **40** 1529
NBS, standard compounding ingredients, **34** 798
Near-infrared analysis of EP rubbers, **39** 956
Neon, diffusion, in rubber, **40** 1156; **40** 29
Neoprene, see also Polychloroprene,
degradation of, **32** 588
heat resistance of, **37** 76
Neoprene,
high temperature cure of, **34** 571
injection molding of, **40**(2)xiii
stabilization of, **34** 856; **34** 869
thermal conductivity of, **40** 36
transitions of, **34** 668
vulcanization of, with dinitrosophenylene bishydroxylamine, **34** 658
Network density, theory of, **40** 1560
and vapor pressure, **40** 1159
Network flaws due to chain ends, **34** 303
and elastic properties, **34** 141
in vulcanizates, **31** 592
Network structure, characterization of (Review), **40** 100
in silicones, **40** 722
Neutron vulcanization, **33** 1083

Obituaries, see biographical sketches
Octachlorocyclopentene, as EPR vulcanizing agent, **35** 1091
Officers, Division of Rubber Chemistry, history, **40** (1)xxxiii
Oil, absorption of carbon black, **40** 1311
effects in polymer blends, **40** 324
effect, on rubber viscosity, **40** 734
effect on SBR viscosity, **40** 463
Oil extended natural rubber, **39** 1656
rubbers (review), **34** 1402
SBR, **32** 701
fractions, labeling, **40** 24
-in-oil emulsion, **40** 909
Olefins, see also individual olefins,
alpha, curable polymers from, **38** 599
polymerization, **38** 595
reaction, with hydrogen disulfide, **31** 353
reaction, with sulfur, **31** 1055, 1065, 1077, 1090
Optical effects of stress, **39** 1436
Optimum cure of natural rubber, **32** 562
Optimum vulcanization, **35** 42, 517
Organic accelerators and rubber vulcanization (review), **35** 1
Organic nature of carbon black surfaces, **31** 941
Organic sulfide reaction with methyl iodide, **32** 208
Orientation, and crosslinking, **31** 98; **40** 650
crystallization nucleation, **40** 786
and dichroism, **40** 663
effect of, on glass transition, **39** 1403
of natural rubber, **31** 469
O-rings in radiation fields, **39** 1258
Osmotic molecular weight of polybutadiene, **36** 488
Oxidants, effect of, on rubber seals, **39** 1215, 1233
Oxidation—see also Aging, Antioxidants,
of butadiene-acrylonitrile rubbers, **35** 700
of carbon black, **39** 1
of elastomers (Review), **38** 1198
and fatigue of natural rubber, **36** 399
at high strain, **39** 1577
of isomeric elastomers, **39** 278

of latex (Review), **38** 1214
of modified rubber, **36** 1043
of natural rubber, **33** 60
effect of light, **39** 537
end groups in, **31** 86
raw, **39** 1608
of polyisoprenes in solution, **39** 530
of polymers, use of infrared spectroscopy in, **35** 57
of polypropylene, **36** 532
of poly(vinyl chloride), **40** 177
reduction,
activation of polymer oxidation, **32** 231
vulcanization, **32** 220
of rubbers, **30** 1251
(Review), **39** 88
suppression of metal ions in, **36** 541
of synthetic rubber latex, **31** 262
of $TiCl_3$, **38** 128
Oxidative breakdown of latex, **31** 262
Oxidative degradation of rubbers, **32** 231, 244
Oxides, in thiuram vulcanization, **32** 150
as vulcanization activators, **32** 164
Oxidized carbon blacks, analysis of, **35** 311
Oxygen, effects of, See also Oxidation, Oxidative,
on cut growth, **39** 348
on natural rubber latex, **38** 1214
on rubber, **32** 759
on stress relaxation, **39** 1667
Ozonation of polypropylene, **36** 527
Ozone, see also Antiozonants,
addition of, to internal and external bonds, **32** 284
and air velocity in ozone cracking, **34** 1220
attack, on butyl rubber, **32** 257
on carboxyl rubber, **35** 437
mechanisms of, **35** 200
prevention of with waxes, **32** 379
on SBR, **32** 1062
cracking, **31** 1015; **32** 1134, 1143; **33** 78
effect of concentration, **35** 411
and elongation, **32** 278
rate, **32** 346
and temperature, **39** 643
degradation of SBR, inhibition, **32** 1155
in dynamic cut growth, **39** 1053
effect of pressure on rubber damage, **37** 583
in Helsinki, **36** 516
and rate of cut growth, **33** 1142, 1156
reaction, with olefins and antiozonants, **36** 201
with phenylene diamines, **39** 1584
with rubbers, **32** 269, 278, 284, 1062
resistance, of blends, **40** 625
comparative, **32** 1088
comparison of test methods, **32** 1080
effect of antioxidants and accelerators, **31** 882
effect of fillers and waxes, **31** 874
evaluation, **35** 421
of insulation, **32** 1080
of natural rubber (apparatus), **31** 866
of neoprene **32** 1117
test, for effects of waxes, **37** 990
use of, to analyze graft polymers, **31** 82
Ozonide, polybutadiene, **32** 288
Ozonolysis, of butyl, **34** 205
of nitrile rubber, **34** 200
and structure of polyisoprene, **34** 211
Ozonolytic degradation, **31** 82

Papers, presentation and publication, **39**(4–1)cxviii, cxxx; **40**(1)lv
Paraffin, diffusion of in rubber, **40** 1570
Patrick, J. C., biographical sketch, **39**(5)cl
Peachey process, **32** 220
mechanism, **33** 195
Pentanone as polybutadiene solvent, **39** 609
Perdeuterio *cis*-polyisoprene, **31** 847
Perhaloolefins in EPR vulcanization, **39** 1094, 1105
Permanent set, see also Stress relaxation, **34** 342
Permeability, of rubbers, **37** 1065
of rubber, to water, **39** 1298
and thermoosmosis, **40** 1409
Peroxides, in polymer oxidation (Review), **38** 1198
reactions with isoparaffins, **35** 118
vulcanization with, **38** 15, 22
efficiency, **38** 560, 573, 581
of EPR with coagents, **35** 1083
mechanism of, **40** 149
of natural rubber, swelling, **40** 673
of oriented rubber, **40** 650
of poly(vinyl ethers), **36** 1159
with radioactive amyl, **39** 521
and scission, silicone rubbers, **40** 629
of silica filled stocks, **34** 729
Phase separation in polymers, **40** 324
Phenol aldehyde vulcanization, **33** 229
Phenolic resins in rubber vulcanization, **36** 268
Phenyl-β-naphthylamine, modulus effects, **39** 1041
volatilization from rubber, **34** 807
Phenylene diamines, **32** 364
analysis for, **35** 676, 684
as natural rubber antioxidants, **34** 816
reaction with ozone, **39** 1584
Photodegradation, of natural rubber, **39** 537
of PVC, **40** 177
Photoelasticity in rubber (Review), **38** 1115
Photoelastic study of cracks, **36** 777
Photooxidation, of natural rubber, **33** 433
of natural rubber vulcanizates, protection against, **34** 919
of peroxide vulcanizates, **34** 686
Photovulcanization, of butyl and polybutadiene rubbers, **32** 557
Physical constants, of rubbers, **39** 132
Pico abrasion test, **34**(1)
Piperidine, effect on rubber, **37** 477
Plastic flow and elasticity of polybutadiene, **32** 673
Plasticity retention index (PRI) of natural rubber, **39** 1608
Plastics, design of structures, **39** 1065
impact resistance, See also Polyblends, Reinforcement, **40** 909
Plastisols, flow, **40** 1270
Plasticizers, effect on rubber viscosity, **40** 734
and physical properties of SBR, **32** 536
Plasticizing PVC with nitrile rubber, **37** 770
Plastometer, Macklow-Smith, **37** 491
Polarographic determination of rubber chemicals, **32** 1254
Polyacrylonitrile, thermal degradater, **32** 748
Poly(alkalene oxide) rubbers, **37** 1
Polyamines, effect on oxidized latex, **31** 425
effect on rubber hydrochloride pastes, **31** 436
Polyblends (Review), **38** 1164, 1180
Polybutadiene, abrasion resistance, **35** 361; **37** 291; **38** 457
and strength, **39** 287; **39** 823
adhesion to polymers, **35** 794
aging, **36** 747; **39** 88
alkyllithium, **33** 636; **34** 176; **38** 863
analysis of structure, **33** 639
by anionic polymerization, **40** 883
in binary systems, **32** 87
blend microscopy, **40** 359, 371
in blends, **31** 49; **38** 62; **40** 324
with bitumen, **37** 474
with natural rubber, **32** 308
with SBR, **31** 244; **40** 350
bound rubber from, **31** 369, 374
branching, **34** 975
and birefringence, **31** 699
carbon black as antioxidant, **38** 636
carbon gel, **32** 1185
chain structure, **40** 1529
compounding, **35** 546
configuration, **40** 1094
conformation of stereoregular, **39** 14
of controlled structure, **32** 614
crosslinking, **32** 706; **33** 699; **37** 139, 173
in blends, **40** 341
transitions, **39** 193
cut growth, **32** 692; **38** 719, 730
cyclization and structure, **31** 415
diffusion in, **39** 1496
dynamic properties, **32** 662; **37** 866
effect of light on sulfur vulcanizates, **31** 747
effect on SBR groove cracking, **39** 1526
effect of structure, on adhesion, **35** 1047

effect of structure, on reactivity, **31** 569
filled with colloidal silica, **32** 639
filler dispersion, **35** 228
fillers and relaxation, **40** 829
flow and elasticity, **32** 673
fracture, **40** 1049
fractionation by elution chromotography, **36** 502
free-radical vulcanization, **33** 199
glass transitions, **37** 138
globulization, **32** 539
grafting on, **38** 655
heat capacity, **32** 444
in heavy service tires, **39** 452
hydrogenated, **35** 1060
hydrogenation, **31** 156, 588; **35** 1052
infrared spectra of *d*-polymer, sulfur reaction, **36** 219
infrared spectra and structure, **39** 945
infrared spectroscopy, **35** 57
interaction parameters, **39** 149
interaction with carbon black, **40** 817
isomerization, **35** 536, 618
from "jump" reaction, **40** 895
mastication, **38** 493
mechanical properties, **31** 1
mechanochemical modification, **36** 803
melting point, **38** 921
microstructure, **33** 639
molecular structure, **37** 408
molecular weight, distribution, **33** 669; **38** 802, 817; **40** 484
resilience and damping, **40** 517
NMR, **38** 517
oil diffusion in, **40** 1570
ozone cracking and temperature, **39** 643
peroxide vulcanization of, **38** 560, 573, 581
photovulcanization of, **32** 557
plasticization and viscosity, **40** 734
reaction with accelerators, **38** 204
with carbenes, **40** 934
with ozone, **32** 284
in reinforcement of polystyrene, **40** 909
relaxation spectrum, **40** 484
sedimentation analysis, **39** 609
slow relaxation processes, **39** 905
solution masterbatching of, **39** 553
solution properties, **36** 488
solvents, **40** 1170
stress softening, **39** 597
structure, **37** 169
structure and conformation, **33** 703
tear strength, **32** 1180
thermal conductivity, **40** 36
thermal degradation, **32** 748
thermal vulcanization, **31** 132
transitions, **38** 343, 347
tri- and tetrachain polymers, **38** 871
viscosity and molecular weight, **40** 806
vulcanization, **31** 526
effect of oxides, **32** 164
kinetics, **40** 849; **31** 329
effect of zinc oxide, **32** 774
wet friction, **37** 878
Poly(1-butene), chain flexibility from sorption data, **36** 1003
Poly(butyl methacrylate), use in unstable elastomers, **39** 1161
Polycarbonate, bisphenol elastomers, **39** 1008
elastomeric block copolymers, **38** 431
Poly-m-Carboranesiloxanes, **39** 1184
Polychloroprene (See also Neoprene), **32** 519; **40** 1071
analysis by gas chromotography, **39** 259
in blends, **38** 62; **40** 1238
cis, **38** 526
creep and compliance, **36** 611
cut growth in ozone, **33** 1142, 1156
cut growth resistance, **38** 719
dynamic properties of, **36** 407, 709; **37** 866
effect of sulfur and thiuram disulfides, **32** 588
energy of deformation, **32** 40
freezing, **32** 463
high temperature vulcanization, **34** 319
melting and light scattering, **32** 463
oil diffusion in, **40** 1570
ozone resistance, **32** 1117; **40** 149
physical constants, **39** 132
reaction with ozone, **32** 269
strain and melting, **40** 788
structure and NMR, **40** 385
by thermal polymerization of dimers, **39** 1390
vulcanization, **35** 517
with nitroso hydroxylamines, **35** 141
structure of, **36** 558
Polydiene microstructure, **38** 863
Polydimethyl siloxane, **39** 149
Polymers, reactivity, **36** 236
Polyester urethanm modulus and molecular weight, **39** 1089
Polyether rubbers (See also Poly(vinyl alkyl) ethers, **36** 296
peroxide, vulcanization, **40** 149
vulcanization, **36** 1159
Poly(ethyl acrylate), vulcanization and orientation, **40** 650
Polyethylene, antioxidants for, in the presence of carbon black, **32** 1164, 1171
chlorosulfonated, **36** 963
TGA, **40** 445
vulcanization of, **36** 882
copolymers, **38** 599
glycol, adsorption from solution, **39** 36
molecular weight distribution of blends, **38** 539
molecular weight and solution viscosity, **40** 806
peroxide vulcanization, **40** 149
structure and conformation, **33** 703
structure and NMR, **40** 385
thermal decomposition of, **37** 937
Poly(ethylene sulfide) polymers, stress relaxation, **39** 524
Polyethylene terephthalate, reinforcement of polybutylene with, **36** 111
Poly(ethylene tetrasulfide), pasticized, **39** 1030
Polyisobutene, **36** 682
adhesion to cellophane, **31** 712
creep and relaxation, **40** 506
entropy elasticity, **40** 777
flow, **40** 1492
fractionation at LCST, **40** 1544
glass transition, **37** 365
mechanical degradation, **33** 909
melting and glass transitions, **31** 499
modulus and loss factor, **34** 148
normal stress in solution, **39** 1460
NMR, **38** 517
radiation grafting on, **39** 1617
reinforcement, with poly(ethylene terephthalate) **36**(1)iii
relaxation, **37** 285
relaxation spectrum, **40** 1470
shear degradation, **38** 243
solution viscosity, **39** 1411
thermomechanical studies, **37** 365
viscosity, **35** 326
work of adhesion, **33** 240
Polyisocyanate vulcanization, **37** 927
Polyisoprene, **40** 673
abrasion, **37** 291
alkyllithium initiation, **33** 652, 655; **38** 863
analysis for, **33** 591
by anionic polymerization, **40** 883
asphalt blends, **37** 474
birefringence and branching, **31** 699
blend microscopy of, **40** 359
in blends with polybutadiene, **40** 341
block copolymer with styrene, **40** 932
from butyllithium, **33** 610
comparison with natural rubber, **39** 1593
configuration, **40** 1094
conformation of stereoregular, **39** 14
crystallizability, **33** 988
cyclization of, **37** 486
density and molecular weight, **36** 1042
deuterio, reaction with sulfur, **36** 219
dynamic properties, **37** 866
effect of radiation, **39** 992

freezing, **32** 1005
hydrogenation, **35** 1063
infrared analysis of, **33** 975
infrared spectroscopy, **35** 57
injection molding, **36** 88
isomerization, **32** 1036; **33** 445; **40** 1222
light scattering, **34** 446
molecular weight distribution, **40** 484
molecular weight and viscosity, **36** 1035
organomagnesium catalysis of synthesis, **33** 971
perdeuterio, **31** 847
peroxide vulcanization, **38** 560
popcorn polymer, **34** 211
reaction of, with carbenes, **40** 934
relaxation spectrum, **40** 484, 1470
SKI, **31** 30, 44
solution viscosity, **39** 1411
solvents for, **40** 1170
stress softening, **40** 28
structure, **34** 211
structure and conformation, **33** 703
structure and NMR, **40** 385
swelling pressure and crosslink density, **40** 532
cis-1,4, synthesis of, **34** 191
by $TiCl_4$ plus alkylaluminum catalysis, **33** 689
trans, solution properties, **36** 488
by Ziegler polymerization, **31** 838; **37** 103
Polymer, liquid thermodynamics, **38** 314, 325
molecules, direct observation of, **39** 567
solvent interaction parameters, **39** 149; **40** 1, 817
Polymers, analysis (Review), **40** 238
compatibility of, in binary systems, **32** 87
curable-α-olefin, **38** 599
decomposition in thermogravimetry, **37** 937
impact resistance, **38** 1164, 1180
oxidation of saturated (Review), **38** 1198
precipitation from solution, **34** 953
solution, thermodynamics of, **40** 1
structure, **33** 703
structure and NMR, **40** 385
and glass transitions, **35** 558
in urethans, **33** 1259
tensile strength, **40** 1036
theory of solutions, **39** 149
thermal conductivity, **39** 841, 858, 863
transitions, determination by beta ray absorption, **36** 459
viscosity, **37** 627
volatile, **39** 1161
Polymerization, with alkyl aluminum and titanium tetrachloride, **34** 986
anionic, of dienes, **40** 883
of butadiene, **35** 1066
of butadiene with cobalt and alkylaluminum chlorides, **39** 508
of chloroprene, **38** 991
bulk thermal, **39** 1390
of EPT, **40** 569; **38** 620
of ethylene and α olefines, **38** 599
of ethylene propylene copolymers, **35** 1101
grafting on polybutadiene, **38** 655
initiated by mastication, **31** 58
of isoprene, **31** 30; **31** 44; **33** 971; **38** 627
by butyllithium, **33** 595, 610
with lithium compounds, **33** 595
by "jump" reaction, **40** 895
kinetics, use of a digital computer, **34** 995
of methacrylate in latex, **33** 825
with redox systems, **32** 244
of siloxanes, **40** 769
solution with alkyllithiums, **39** 491
with $TiCl_3$, **37** 128
with $TiCl_4$-trialkylaluminum, and molecular weight, **33** 689
Ziegler, theory, **32** 597
Poly(methyl methacrylate), extraction from rubber, **40** 1553
grafts in latex, **33** 825
grafts on natural rubber, **31** 82
mixtures with rubber, **31** 58
Polyolefin elastomers (See also Ethylene propylene), **34** 361; **36** 1583
Polyolefin, pyrolysis for analysis, **39** 248, 259
Polypentadiene, conformation of stereoregular, **39** 14
Polyphenyl vinylene, as PVC stabilizer, **33** 1188
Polypropylene, crystallization, **40** 786
fracture, **40** 1036
interactin parameter, **39** 149
microstructure, **39** 14
oxidation of atactic, **36** 532
peroxide vulcanization, **40** 149
ozonation, **36** 527
structure and NMR, **40** 385, 400
oxide, **37** 1
oxide oxidation, **39** 278
oxide vulcanizate properties, **40** 1421
Polysiloxane, molecular weight distribution, **40** 1084
Polystyrene, **39** 149
adsorption, **39** 36
blends with EPR grafts, **39** 1667
block copolymers with isoprene, **40** 932
cold flow, **40** 1516
extraction from rubber, **40** 1553
grafts with natural rubber, **31** 82
impact resistant (Review), **38** 1164, 1180
mechanical breakdown, **34** 474
molecular weight by microscopy, **39** 567
reinforced with polybutadiene, **40** 909
relaxation spectrum, **40** 1470
swelling of latex, **32** 814
Polysulfide polymers, plasticized with sulfur, **39** 1030
containing polar links, **33** 416
stress relaxation, **39** 524
Polysulfide rubbers, expansion, at low temperatures, **39** 211
reaction with metal oxides, **31** 624
use in rockets, **39** 112
in vibration damping, **39** 740
Polysulfides, absorption spectra, **31** 808
analysis for, **40** 100
changes in tires, **39** 1526
determination in vulcanizates, **40** 866
effect of light, **31** 747
reaction with amines, **31** 612, 615
with methyl iodide, **31** 621
with reducing agents, **31** 608, 618
structure and molecular refraction, **31** 815
in vulcanization, **40** 849
Polytriazine, synthesis, **39** 1175
Polyurethan, analysis, **37** 146; **40** 238
crosslinking, **34** 629
crystallinity and structure, **38** 452
durability, **39** 1328
effect of branching, **34** 639
failure criteria, **37** 511, 524
fibers, **36** 719
flammability and thermal degradation, **39** 461
foams, **33** 1293; **37** 38
fracture mechanisms, **38** 248
fungus resistance, **39** 1338
heparin coating, **39** 1288
hydrolytic stability, **39** 1308
mechanical properties, **33** 1092
modulus reinforcement, **40** 1330, 1337
peroxide vulcanization, **40** 149
porous sheet, **40** 1296
stress relaxation, **40** 614, 1230
structure and NMR, **40** 385
structure and properties, **35** 970; **38** 140, 150
swelling, **35** 284
tensile strength and structure, **35** 753
thermal degradation, **40** 1213
thermoplastic, **35** 742
use in rockets, **39** 112
"virtually crosslinked", **35** 742
viscoelasticity of, **35** 291; **40** 1105
viscoelastic relaxation, **39** 375
Poly(vinyl acetate), adsorption from solution, **39** 36
relaxation spectrum, **40** 1470
solution viscosity, **39** 1411
Poly(vinyl alkyl ethers), dynamic properties, **39** 881
vulcanization, **36** 1159
Poly(vinyl chloride), adsorption, **39** 36
in blends, **40** 1119
blends with nitrile rubber, **35** 716, 726

comparison with rubber hydrochloride, **31** 436
creep, **40** 506
degradation, **40** 177
dilatometry, **34** 123
fracture, **40** 1036
friction on steel, **35** 379
in graft polymers, **34** 760
interaction parameter, **39** 149
plasticization, by nitrile rubber, **37** 770
plastisol flow, **40** 1270
in porous coatings, **40** 1296
stability, **33** 1188
TGA, **40** 445
thermal conductivity of, **40** 36
Poly(vinyl ethyl ether), see also Polyether,
fracture, **40** 1049
radiation vulcanization, **36** 248
oxidation, **39** 278
Popcorn polymer, **31** 581
Pore formation kinetics, **34** 357
Porosity of sprayed coatings, **40** 1296
Potassium permanganate oxidation of rubber in monolayers, **31** 446
Power loss apparatus, **32** 915
Power and thrust of mill rolls, **33** 868
P-phenylenediamines, ring-alkylated, as antiozonants, **36** 537
Presentation and publication of papers, **39**(4–1) cxxx; **40**(1)lv, (3)xi
Preservation and concentration of hevea latex, **32** 1660
Pressure, buildup in carcass, **38** 158
effect on carbon black, **40** 1311
effect on polymer thermal conductivity, **39** 863
on self adhesion, **32** 527
on vulcanization, **33** 1019
on water permeability of rubber, **39** 1298
swelling and crosslink density, **40** 532
Prestress and damping, **33** 282
Processing, of chlorobutyl rubber, **35** 467
effect of Banbury rotor speed, **31** 907
on cure rate, **36** 911
evaluation of, with the Cepar apparatus, **34** 765
heat transfer in, **40** 36
of SBR, **40** 463
Propellant resistant elastomers, **39** 1215, 1222, 1233
Propellants, mechanical properties, **37** 524, 542
polyurethan, **37** 511
Properties of rubber, **39** 132, 143
Propylene, analysis for in EPR, **39** 226
effects in EPT synthesis, **40** 556
interpolymers, **40** 569
reactivity with ethylene, **39** 241
Propylene oxide rubber, **36** 296
Protection of rubber, against atmospheric ozone-cracking, **31** 1015
Protein, rubberlike, **36** 90
Proton magnetic resonance in natural rubber, **37** 268
Publication, of meeting papers, **39**(4–1)cxxx; **40** (1)lv
of technical papers, **40**(3)xi
Pyridine rubber, aging of, **39** 88
Pyrolysis, in analysis of rubbers, **32** 854
for EPT analysis, **40** 936
and gas chromatography in polymer analysis, **40** 238
in rubber identification, **36** 1129

Quantum mechanics, structure calculation, **40** 883

Racked rubber, **31** 469, 485
Radiation, additives to protect against, **34** 228
crosslinking, **31** 737; **34** 1072
and antirad action, **33** 483
of oriented rubber, **31** 469; **40** 650
damage to rubber, **34** 250
effect, on carbon black, **33** 796
on elastomers, **39** 1258, 1268
on natural rubber latex reinforcement, **35** 848
on oriented natural rubber, **31** 98
on polymers, **33** 1375
grafting, **39** 1617
isomerization of polyisoprene, **40** 1222
and polyisoprene unsaturation, **39** 992
and rubber aging, **39** 88
scission and antirad action, **33** 476
for transition temperature analysis, **36** 459
vulcanization, **32** 785; **38** 94
and chain fracture, **33** 1072
of polyether and EP rubbers, **36** 248
of rubbers, **34** 735
of SBR, **33** 1083; **34** 265
of silica filled stocks, **34** 729
Radical acceptors in radiation cures, **31** 737
Radical and polar mechanisms in vulcanization, **33** 342
Radicals in polymers by EPR, **33** 462, 469
Radioactive benzothiazole disulfide, exchange reaction, **35** 652
Radioactive extender oil, diffusion of, **40** 1570
Radioactive isoprene, copolymerization with butadiene, **33** 623
Radioactive isoprene, synthesis of, **34** 991
Radioactive isotopes, in rating tread wear, **40** 969
Radioactive MBT in vulcanization, **31** 751
Radioactive mercaptans in polybutadiene, **32** 706
Radioactive peroxide vulcanization of EPR, **39** 521
Radioactive polymer, use in diffusion measurements, **39** 217
Radioactive sulfur, diffusion of, **33** 1015, 1029
in tires, **35** 621
exchange with accelerators, **35** 652
with MBTS, **34** 334
with thiurams, **34** 600
reaction with carbon black, **34** 588
in vulcanization, **31** 1035; **33** 181, 1015
Radiochemical analysis for unsaturation, **36** 1071
Radiochlorine, reaction of with butyl rubber, **36** 1071
Radiochromatographic separation of dithiocarbamates and sulfur, **35** 449
Radiography, see X-ray
Radiolytic stress relaxation of EPR, **39** 982
Reactivity ratios of ethylene and propylene, **39** 241
Reagglomeration as a cause of cracking, **36** 754
Rebound, see Resilience
Reclaimed rubber (Review), **40** 217
Reclaiming, of natural rubber, **31** 202
of rubber, **31** 599
Redox activation of degradation, **33** 790
Reduction, with hydrogen, see Hydrogenation,
Reflectance, and carbon black particle size, **40** 1319
Refractive index,
and color, **36** 158
and polymer density, **40** 1281
Reinforced thermoplastics (Review), **38** 1164, 1180
Reinforcement—see also Carbon black, Fillers, Mullins effect, Silica, Stress softening,
of butyl rubber, **36** 111; **37** 1013, 1034
criterion of carbon black, **35** 250
and contact potentials, **36** 176
by fillers, **36** 325
of fluoroelastomers, **39** 1141
of latex, **31** 655; **36** 156
by mechanochemical means, **33** 923, 929
molecular theory, **35** 857; **36** 1081
of natural rubber modulus by organic compounds, **39** 1041
and Mullins' effect, **39** 1530, 1544
of plastics by rubber, **39** 1019
of preswollen rubber, **39** 1533
of rubber, by carbon black, **31** 361
by resins, **35** 1308
and stress softening, **40** 350
studies with electron microscope, **35** 335
and tear resistance, **33** 315
Reinforcing fillers in elastomers, **30** 1400; **38** 1070
Reinforcing silicas, as fillers, **34** 729
and silicates (Review), **32** 1286
Relaxation—see also Creep, Hysteresis, Stress relaxation, Viscoelasticity,
aging and viscoelasticity, **37** 617
creep and hysteresis, **36** 377, 389

at large strains, **36** 697
of polyurethans, **39** 375
of rubber, viscoelastic, **39** 870
spectra of elastomers, **40** 484,493
spectrum, and molecular weight, **40** 493
of dilatant fluids, **40** 1505
and tensile strength of vulcanizates, **36** 815
Relaxation times, see Dynamic properties, Damping,
Resilience,
and damping, **37** 866
damping and molecular weight of polybutadiene, **40** 517
measurement of, **32** 915
of rubber, measurement of, **34** 555
and structure of polyethers, **39** 881
and wet friction, **37** 878
Resilin, an elastic protein, **36** 90
Resin vulcanization, of butyl, **33** 229
of rubber, **36** 268
Resins used in rubber (Review), **36** 1542
Resistivity and elongation of vulcanizates, **35** 317
Resonant beam tester, **37** 866
Resorcinol-formaldehyde resins in cord adhesives, **32** 870
Retarders, and scorch, **35** 501; **36** 911
Reversion, of butyl vulcanizates, **39** 581
in TMTD vulcanization, **33** 1068
Reviews, Decennial Index of Rubber, **40**(1)xxxvii
Reynolds number and polymer flow, **40** 1426
Rheological, analysis of raw elastomers, **39** 436
properties of rubber compounds, **37** 491
testing at low temperature, **33** 1114
units, of polyisobutylene, **40** 1492
in continuous shear, **37** 503
Rheology, kinetics, **35** 1013
of n-butyllithium polybutadiene, **38** 881,893,907
and Deborah number, **40** 1426
of filled elastomers (in Review), **38** 1070
measurement, **38** 769
multichain polybutadienes, **38** 893
of polymers, **35** 1013
in polymer characterization, **31** 681
in rubber processing, **32** 1039
of rubber solutions, **32** 1039
of SBR, oil, black mixes, **40** 463
oscillating disk, **36** 451
Rhodium salts, catalysis of butadiene polymerization, **40** 602
Ring crack growth test, **38** 719
Rivlin, Mooney relation, see Mooney, Stress strain, Viscoelasticity
Roads, effect on skidding, **38** 840
effect of, on tread wear, **38** 457
rubber in, **37** 457
surface and skid resistance, **40** 25,684
and wet friction, **37** 883,1055
Rocket motor, propellants, polyurethan, **37** 511,524, 542
solid, **37** 524
Rockets, elastomers in solid, **39** 112
seals for fuel chamber, **39** 1215,1233
Rolling resistance, of solid rubber, **33** 302
of tires, **33** 302
Rolls, rubber covered, **35** 224,403
Room temperature aging (a correction), **32** 647
Rotary power loss machine **32** 915
Rotomill, **33** 98
Rouse theory, solution for, **40** 1446
Royalene—see ethylene propylene terpolymer
Rubber, see elastomers and individual polymers,
bitumen binders in roads, **37** 457
blends, structure in, **38** 62
bonding of, to metal, **33** 757
chemicals, analysis, **32** 1254
to cord bond strength, **32** 898
covered pressure rollers, **35** 403
covered rolls, rolling radius of, **35** 224
covered yarns, properties, **35** 949
elasticity (Review), **31** 959; **38** 1039
elasticity, correction of theory for chain ends, **34** 301
friction of, **36** 64,365
on dry surfaces, **34** 1162
hardness, standard and microtests, **36** 82
hydrochloride, from latex, **31** 436
models as stress aid, **37** 199
models of yarns and cords, **34** 1169
modification of vinyl polymers, **40** 909
network characterization, **37** 668
pads, load deflection reactions, **31** 395
reclaiming, **40** 217
Research (Goodyear Medal address) W. P. Wiegard, **35**(4)xxiv
Reviews (commentary), **39**(1)xxxiii
(Index), (1)xxxvii
Science Hall of Fame, **39**(3)lxxxix
solutions, rheology of, **32** 1039
solvent interaction, **31** 691
as stationary phase in chromatography, **36** 310
testing, see Apparatus, (Goodyear address), **37** (2)xxiv
Rubber groups, **40**(1)vii
Rubbers, adduct, **31** 213
birefringence and photoelasticity, **38** 1115
derived from olefins and diolefins, **34** 361
derived from polyethers, **36** 296
from individual trees, **32** 1228
injection molding of, **36** 88
reviews on, acidic, **30** 1347
basic, **30** 1387
butyl, **32** 1475
fluorine-containing, **34** 1521
high temperature, **32** 1587
natural, **32** 1627,1660; **34** 1229
nitroso, **39** 481
polyolefin, **36** 1583
silicone, **35** 1222
urethan, **33** 1259,1293
tack of, **38** 689
Rupture—see also strength,
of foams, **36** 507
internal, **34** 925
mechanism of, **34** 103
of rubber, **34** 66,76,85
strength of solids, **35** 178
Rutile in rubber, **36** 158

Safflower oil, as photooxidation inhibitor in neoprene, **34** 856
Salingenol—rubber derivation, **36** 1042
Schroeder's paradox, **40** 1166
Scission, of elastomers by free radicals in solution, **31** 278
of fluoroelastomers, **40** 621
of molecular chains by irradiation, **31** 98
of polyisoprenes, oxidative, **39** 530
of urethan polymers, **40** 614
Scorch, **35** 509
in chlorobutyl, **35** 467
delay kinetics, theory, **37** 689
determination with CEPAR apparatus, **34** 765
determination with an oscillating disk rheometer, **36** 451
determination with Wallace curometer, **36** 922
effect of processing, **36** 911
during milling, **32** 295
and retarders, **35** 501
Sealants for high temperatures, **39** 1200
Seals for LANCE missile, **39** 1233
Second order transitions, **35** 295,558
by beta-ray absorption, **36** 459
effect of crosslinking, **35** 776
Sedimentation analysis, of polybutadiene, **39** 609
of SBR, **39** 622
Separation, of graft copolymers, **31** 819
Sequence of monomers, analysis, **40** 411,427
Shape of tires, theory, **36** 11
Shear degradation, polyisobutene, **38** 243
Shear modulus, effect of compression, **36** 675
Shear thickening, of plastisols, **40** 1270
Shellac, in nitrile rubber, **39** 763
in SBR, **36** 561; **38** 212
Shift factor, strain dependent, **39** 1421,1428

Shock and vibration isolation, **37** 1190
Shore hardness, relation to British Standard, International hardness and Young's modulus, **31** 896
Silica, bound rubber with, **31** 374
effect on aging of latex compounds, **34** 834
effect on swelling of vulcanized rubber, **32** 825
effect on vulcanizate properties, **35** 833
electron microscopy in rubber, **35** 335
as filler in polybutadiene, **32** 639
interaction, with rubbers (Review), **38** 1070
in rubber blends, **40** 371
and silicates, **32** 1286
and thermal aging of latex compounds, **34** 834
Silicone rubbers, (Review), **35** 1222
in ablatives, **39** 1247
aging, **39** 88
chain density, **40** 1560
crosslink density, **38** 924
effect of radiation, **39** 1268
failure envelopes, **37** 792
flow properties, **40** 1483
fracture, **40** 1040
gum vulcanizates, **40** 722
infrared analyses, **32** 854
interaction parameter, **37** 253; **39** 149
peroxide vulcanization, **40** 140
solution and diffusion in, **36** 642,651
solvent resistance, **37** 261
strength, **31** 19; **40** 694
stress relaxation, **35** 182; **40** 629
thermal conductivity of (Review), **40** 36
thermal expansion, **37** 160
use in anesthesia, **40** 928
uses in the body, **39** 1276,1288,1293
uses in space, **39** 1127,1247
Silicones as mold release, **36** 1148
Siloxane polymerization kinetics, **40** 769
Sinusoidal-strain dynamic testing, **36** 422
SKI polyisoprene, **31** 30
Skid resistance, **33** 151; **38** 112
and accidents, and road surface, **40** 684
and friction, **37** 878
and surfaces **40** 25
tester, **38** 840
of tires, **40** 25
Sodium chloride,
effect on SBR, **33** 510
as polyurethan filler, **40** 1330
Softening,
of natural rubber gum stocks, **40** 840
by swelling, **39** 1553
Sol-gel analysis, **38** 367
of peroxide vulcanization, **37** 904
Solubility, of hydrocarbons in natural rubber, **35** 153
and mobility of sulfur in ethylene copolymers, **36** 660
parameter, **40** 1
and polymer compatibility, **40** 324
of rubbers, **37** 246
of silicone rubbers, **37** 261
mutual, of polymers, **31** 49,244,250,257; **32** 87, 308
of sulfur in rubber, **35** 147
Solution, and diffusion in silicone rubber, **36** 642,651
free radical reactions in, **31** 278
masterbatching, **39** 553
nonNewtonian viscosity, **39** 631
of polymers mixed with rubber, **40** 1553
properties of polybutadiene and polyisoprene, **30** 488
properties of rubber, **33** 921
rheology of rubber, **32** 1039
theory of polymer, **39** 149
thermodynamics of concentrated, **40** 1
viscosity of concentrated polymer, **40** 522
of polymer, **39** 1411
and molecular weight, **40** 806
Solvents, effect on adsorption, **39** 36
effects on alkyllithium-initiated polymerization, **39** 491
effect of, on EPT synthesis, **40** 556
effect on graft polymer configurations, **31** 829
effect on polybutadiene hydrogenation, **31** 588
effect on reinforcement, **39** 1553
effect on tensile strength of cast films, **31** 27
interaction with and creep for EPT, **37** 894
interaction with rubber, **31** 691
for polybutadiene, **39** 609
resistance to, of silicone elastomers, **37** 261
for SBR, **37** 622
solubility parameters, **37** 246
for synthetic rubbers, **40** 1170
Sorption, of antioxidants, **33** 528
of binary solutions by vulcanizates, **32** 77
and diffusion in elastomers, **35** 153,166
Sound, propagation in rubber plates and rods, **32** 21
velocity in natural rubber, **37** 857
Space, elastomers in, **39** 1127,1161,1247
Speakers bureau, DRC, **40**(1)xl
Specific volume, of chloroprene, SBR, polybutadiene and natural rubber, **31** 513
and molecular packing, **35** 906
partial, of polymers, **40** 1281
Spectrophotometry and chromatography of antioxidants and accelerators, **36** 1119,1129
Spectroscopic investigation of vulcanization, **36** 262
Speed of mixing rubber, **31** 907
Spongy polymer of isoprene, **34** 211
Spraying porous sheet, **40** 1296
Springs, stability and elastic moduli of rubber, **38** 415
Stability, of foam, **31** 1142
of high polymer latexes, **31** 1105
of latex (Review), **31** 1105
of poly(vinyl chloride), **33** 1188
of sulfenamides, **37** 204
of sulfur-containing polymers, **35** 517
Stabilization, of PVC, **40** 177
of rubber (Review), **39** 88
Standard materials for compounding, **34** 798
Stark rubber, **40**(3)xxv
Static friction, **34** 461
Statistical treatments of rubber structure, **33** 1201
Statistics, of rubber elasticity, **39** 1472
of tensile strength variation, **39** 712
Standinger, H., biographical sketch, **40**(3)xvi
Stereochemistry of rubber biosynthesis, **40** 679
Stereoregular polymerizations of conjugated dienes (review), **36** 1571
Stereoregularity and conformation of polydienes (review), **39** 14
Strain amplification and Mullin effect, **39** 799,814
Strain birefringence of rubber, **39** 1436
Strain, and carbon black, effect on viscoelasticity, **35** 918
effect on crystallization, **40** 1381,1394
effect on dynamic properties, **39** 1421,1428
effect on oxidation, **39** 1577
effect on viscoelasticity, **35** 927
energy and stress softening, **39** 597
gages in tensile testing, **32** 907
rate in Mullins effect, **39** 1530
rate and strength, **32** 13,992
in loaded tires, **40** 271
Strength, and abrasion of rubber, **39** 287
effect of networks, **40** 694
of elastomers, **32** 1269
and hysteresis, **40** 815
Strength,
properties, theory, **36** 1
of pyridine rubber, **35** 453
of SBR, **34** 897
of SBR in low-stress tests, **39** 923
of solids, theoretical, **35** 178
Stress, and crystallization of natural rubber, **39** 685
distribution at a crack, **36** 777
effect on aging, **39** 88
optical behavior, **39** 1436
optical constants, **33** 763
as a reduced variable, **34** 884
Stresses, at a crack in an elastomer, **36** 777
tire section, **40** 271

Stress relaxation, **38** 76
aging and viscoelasticity, **37** 617
and creep, **35** 182
of EPR, radiolytic, **39** 982
of EPT, **39** 1634
and fillers, **40** 829
of hard rubber, **39** 1065
and infrared dichroism, **40** 663
during irradiation, **31** 98
at low temperatures, **33** 1114
of natural rubber, **32** 739; **39** 1640
in oxygen and nitrogen, **32** 759
and ozone resistance, **32** 1104
during photoxidation, natural rubber, **33** 433
physical, **39** 870
chemical, **36** 50
of polysulfide polymers, **39** 524
of polyurethan rubbers, **40** 614
of radiation vulcanizates, **34** 910
and rubber purity, **38** 370
of SBR at high strain, **34** 884
of silicone rubber, **40** 629
theory, **35** 1013; **40** 506
during thermal oxidation, **33** 423
of Viton B, **40** 621
of vulcanizates, **33** 72
and vulcanizate structure, **39** 1625
Stress softening, gum rubber, **40** 840
of filled vulcanizates, **39** 597
rate and temperature effects, **39** 1530
in rubbers, **39** 814
of SBR, **40** 31
and strain amplification, **39** 799,814
theory, **34** 493
Stress strain, behavior, carbon black, **40** 817
work in, **32** 40
C_2 term in, **33** 254
in compression, **32** 409,420
Stress strain curves and nonlinear response, **36** 682
effect of entanglements, **39** 1489
and failure envelope, **40** 694
and fillers, **40** 801
isotherm for networks, **33** 254
at large extensions, **34** 290
measurement, extensometer for, **36** 68
of natural rubber in compression and tension, **32** 1
and network flaws, **34** 141
properties, contribution of internal energy, **36** 351
of flaws, **36** 597
at high elongation rates, **35** 813
of reinforced plastics, **39** 1019
and relaxation, **40** 406
of rubber, **36** 59
of rubber covered fibers, **35** 949
theory, **40** 1446
and swelling, **40** 673
in tension, **32** 395
testing, high speed, **36** 28
theory, **40** 1060
Stress temperature coefficients, **33** 763
Stress waves and fracture surfaces, **33** 275
Stretching, effect on thermal conductivity, **39** 858
Structure, of anionic diene polymers, **40** 883
Structure,
in black suspensions, **35** 877
of block copolymers, **40** 932
of block polymer solutions, **40** 1526
of carbon black (Review), **37** 1245; **38** 1070
of carbon blacks in rubber, **34** 1141; **35** 590; **38** 387,677
chemical activity and vulcanizability, **31** 569
chemical studies of polymer, **40** 411
of crystalline hydrocarbon polymers, **33** 703
of cyclized polybutadiene, **31** 415
effects in polybutadiene, **37** 169
effect on reactivity of polybutadiene, **31** 569
of filled nitrile rubber, **34** 959
molecular, and vapor permeability, **39** 751
of natural rubber, **34** 423
of natural rubber vulcanizates, **36** 547
physical studies of sequences, **40** 427
of polycycloisoprene, **36** 558
polymer, and NMR, **40** 385,400
of polypropylenes, **40** 400
of "popcorn" polymer, **31** 581
and properties of polyethers, **39** 881
and reactivity in oxidation of elastomers, **38** 1198
of rubber in biosynthesis, **40** 679
of rubber vulcanizates, **40** 100
of silicone networks, **40** 722
of SKN-26 and SKN-40 using ozonolysis, **34** 200
Style in Rubber Chemistry and Technology, **38**(4)x
Styrene, alkyllithium polymers, **40** 490
butadiene block polymers, **40** 1183
Styrene butadiene rubber, **32** 67
abrasion, **37** 291; **38** 457
and strength, **39** 823
and tensile strength, **39** 287
in tires, **31** 166
addition of mercaptans, **31** 213
adhesion, to cellophane, **34** 879
to polymers, **35** 794
adsorption, **39** 36
aging of, **38** 647
alfin type, **38** 103
analysis of, by gas chromatography, **39** 248,259
in binary systems, **32** 87
blend microscopy, **40** 359,371
in blends, **31** 49; **38** 62; **40** 324,1238
with polybutadiene, **31** 244; **40** 341,350
branching and birefringence, **31** 699
carbon black dispersion in, **36** 115
carbon black identification in, **40** 1323
carbon gel, **32** 1185
cement modification with latex, **37** 758
coagulation of latex, **32** 531
compounding with shellac, **38** 212
creep and compliance, **36** 611
creep failure, **39** 923
cut growth in ozone, **33** 1142,1156
cut growth resistance, **38** 719,730; **39** 348
diffusion of gases in, **39** 1496
dynamic adhesion in tires, **32** 889
dynamic properties, **32** 662; **36** 407,709; **37** 866
effects of fillers in, **35** 581
effect of gamma radiation, **32** 785
effect of mastication, **38** 961
effect of plasticizers, **32** 536
effect of radiation, **39** 1268
effect of temperature on abrasion, **31** 650
electron microscopy of filled, **35** 250
energy of deformation, **32** 40
failure mechanics, **38** 263,278
fatigue, **33** 946; **36** 480; **38** 661
filler dispersion, **35** 228
fillers and stress relaxation, **40** 829
flow behavior, **38** 769
fracture, **40** 1036,1049
friction, **37** 386
friction of on polished surfaces, **33** 1166
glass transition, **34** 1193,1201
groove cracking in tires, **39** 1526
gum tensiles, variability, **39** 712
neparin coating, **39** 1288
high speed tensile failure, **32** 13
high temperature cure, **34** 571
hydroxylation with permangonate in monolayers, **31** 446
hysteresis and strength, **40** 815
infrared spectra, **32** 628,854
injection molding, **40**(2)xiii
interaction with carbon black, **40** 817
interaction parameters, **39** 149
latex, agglomeration, **36** 581
masterbatching, **31** 147
reinforcement with carbon black, **31** 655
stability, **33** 535
low temperature creep, **33** 1114
mechanical properties, **31** 1
mechanochemical modification of, **33** 959
metal ion catalyzed oxidation, **36** 541
modification of cement, **37** 758
modulus and loss factor, **34** 148
molecular weight distribution, **38** 802,817; **40** 484

molecular weight and dynamic properties, **32** 651
Mullins effect, **35** 259, 839; **39** 814, 1530
oil, black and flow, **40** 463
oil extension, **32** 701
oxidation of (Review), **38** 1198
oxidation softening of latex, **31** 262
ozone, attack by, **35** 200
cracking, oxygen-free, **37** 583
cracking, and temperature, **39** 643
protection with waxes, **32** 379
resistance, **32** 346
permeability and durability of tires, **38** 158
peroxide vulcanization, **40** 149
physical contacts, **39** 132
preswelling and reinforcement, **39** 1553
protection, with antiozonants, **32** 364
against ozone, **32** 1155
in radiation field, **39** 1258
for radiation resistance, **34** 228
reactions, with accelerators, **38** 204
with ozone, **32** 269, 278, 1062
relaxation spectrum, **40** 484
resistivity on elongation, **35** 317
scission during aging, **34** 922
sedimentation analysis, **39** 609
self-diffusion and tack, **39** 217
and shellac, **36** 561
with silica filler, **34** 729
skid resistance of, **38** 112
slow relaxation processes, **39** 870
solution masterbatching, **39** 553
solvents, **40** 1170
solvent swelling, **32** 825
stabilizers, **33** 510
stress relaxation, **33** 72; **34** 884; **35** 182
stress softening of, **39** 597
stress strain behavior, **32** 394
swelling and strength, **31** 756
tack of, **32** 48; **38** 689
tear resistance, **32** 1180; **38** 700
tensile strength, **36** 1; **37** 81
tensile strength and testing rate, **34** 897
thermal conductivity, **32** 444; **40** 36
thermal decomposition, **37** 937
thermal degradation, **32** 748
thermal vulcanization, **31** 132
thermoelasticity, **32** 1016
ultimate tensile properties, **37** 777
viscoelasticity, **36** 682
vulcanizates, swelling, **38** 940, 943
tensile strength, **32** 680
vulcanization, **31** 526
by gamma radiation, **34** 265
with maleimides, **38** 352
with peroxides, **38** 573
by radiation, **38** 94
water solubility, **36** 621
wet friction, **37** 878
zinc oxide in vulcanization, **32** 780
Styrene copolymers, birefringence, **40** 1373
structure of block, **40** 1526
with divinylbenzene, **40** 476
fractionation of grafts on rubber, **40** 1553
grafts on EPR, **39** 1667
polymerization in latex, **33** 825
polymerization, effect at rhodium salts, **40** 602
radiation polymerization in rubber, **32** 1243
Suggestions to Authors, **40**(1)xviii
Sulfenamide accelerators (Review), **35** 1
accelerators, **33** 846; **36** 911
and cure rate, **32** 295
disappearance during vulcanization, **37** 635, 650
of vulcanization, **36** 844
exchange with MBTS, **35** 652
reaction with diphenylmethane, **35** 491, 484
reaction with rubber, **37** 709
thermal stability, **37** 204
thiocarbamoyl, **35** 644
Sulfides and polysulfides, **31** 609, 612, 615, 618, 621, 624
reactions, with amines, **31** 612, 615
with methyl iodide, **31** 621
with reducing agents, **31** 608, 618
Sulfonylhydrozides, as blowing agents, **39** 211
Sulfur, analysis for, **35** 498
analysis for in accelerators, **32** 123
analysis of vulcanizates with, **40** 100
atoms, lability, **33** 1010
blooming, **35** 149
diffusion, **33** 1015, 1029
in rubber, **31** 356
in tires, **35** 621
group analysis, **32** 941
and olefinic substances, reactions, **31** 1055, 1065, 1077, 1090
polybutadiene isomerization, **35** 536
in polymer chains, **35** 517
as polymer plasticizer, **39** 1030
in radiation curing of polyethers, **36** 248
radioactive, in mercaptans, **32** 706
in treadwear rating, **40** 969
in vulcanization, **32** 770
reaction, with carbon black, **31** 361; **32** 118
with deuterio polyolefins, **36** 219
with 2,6-dimethylocta-2,6-diene, **31** 1065
with diphenylmethane, **33** 211, 217
with monoolefins, **31** 1055
with polybutadiene, **31** 569
in polymerization of chloroprene, **32** 588
with rubber, **33** 1051
in rubber vulcanization, **30** 1291; **31** 1035
solubility in ethylene copolymers, **36** 660
structure of linkages in vulcanizates, **35** 113
and sulfur compounds, reaction with olefins, **35** 633
vulcanization, **37** 910
fate of curing system during, **37** 635, 650
fraction of effective crosslinks in SBR, **37** 221
of nitrile rubber, **32** 128
Supercooled rubber, crystallization of, **37** 404
Superior processing natural rubber, **33** 810
Swelling, see also Thermodynamics, **38** 314, 325
in binary solvents, **32** 77; **32** 536; **38** 940
of carbon black filled natural rubber, **35** 274
and carbon black reinforcement, **39** 1553
filled vulcanizates, **38** 943, 1070
and freezing of rubber, **37** 311
of latex, **32** 809, 814
of nitrile rubber, **34** 964
of polymers, and filler effects, **35** 284
pressure and molecular weight distribution, **40** 532
rapid analytical method, **37** 668
of reinforced vulcanizates, **37** 6
of rubber, **38** 314, 325
in solvent and modulus, **90** 673
studies of filled vulcanizates, **37** 326
thermodynamics, **39** 651
and vulcanization, **37** 563, 571, 576
and vulcanizate strength, **31** 756
of vulcanized rubber, **32** 825
Symposium, elastomers for unusual environmental conditions, **39**(4–2)
Syndiotactic, see stereoregularity, **39** 14
Synergism in natural rubber aging, **39** 1565
Synthesis of isoprene-C^{14}, **34** 991
Synthetic rubbers, adhesion to polymers, **35** 794
latex, developments in (Review), **34** 1501
solvents for, **40** 1170

Tack, apparatus for determining, **37** 28
and diffusion, **37** 1153; **39** 217
of polyurethans, **39** 974
in rubber (Review), **37** 1178
of rubber, measurement, **38** 689
strength and molecular properties, **32** 48
Tackmeter, **37** 28
Tacticity, see also microstructure, stereoregular, **39** 14
Tear, and crack growth of natural rubber, **35** 210
of elastomers, **34** 103
energy, **36** 325; **40** 1036
propagation, **34** 57, 66, 85
resistance, of filled vulcanizates, **32** 1181
of vulcanizates, **33** 315, 1438

testing (in Review), **38** 1007
tests, **34** 119; **38** 700
ISO crescent, **31**(1)xviii
Temperature, coefficient of vulcanization, **35** 76, 92
critical solution, **40** 1, 1544
dependence of mechanical properties, **33** 763
effect on cut growth, **32** 692
effect on Mullins' effect, **39** 1530
and ozone cracking, **39** 643
resistant elastomers, **39** 1141
retraction (TR) test, **33** 1
and strain and frequency as independent parameters, **39** 1421, 1428
and viscous flow, **37** 627
Tensile, failure in bonded rubber, **31** 393
failure at high speed, **32** 13
properties and crosslink density of EDT, **39** 726
strength, **31** 27
and abrasion resistance, **39** 823
amorphous polymers, **40** 1049
of amorphous rubbers, **31** 13; **36** 1
of blends, **31** 49
of butyl rubber, **31** 27
and dispersion, **37** 826
effect of swelling, **31** 756
of elastomers (Review), **32** 1269
of EPR and SBR, **37** 818
and failure envelope, **37** 777, 792; **40** 684, 694
strength of filled SBR vulcanizates, **32** 680
of fluoroolefin elastomers, **40** 544
at high strain rates, **35** 813; **36** 28
and hysteresis, **40** 815
ISO test, **31**(1)xxiii
molecular theory, **37** 808
of polymers, **40** 1049
of polyurethans, **35** 753
and relaxation of vulcanizates, **36** 815
statistical distribution, **39** 340
and tear, **35** 178
variability of SBR, **39** 712
testing, **34** 76
Testing, apparatus, extensometer for tension testing, **31** 673
apparatus, Umstätter viscometer, **31** 681
rubber, **37**(2)xxiv
Test methods, for abrasion resistance, **31** 166, 387
dynamic shear modulus during cure, **31** 105
ISO standard, **34**(1)xiv
for ozone resistance, **32** 1080
polymer adhesion, **31** 89
Tetracyclosqualene, **37** 486
Tetraethylthiuram disulfide (See also thiuram), **33** 1062
Tetramethylthiuram disulfide vulcanization acceleration by thiourea, **34** 795
analysis, **36** 305
effect of on UV aging, **31** 327
and labile hydrogen atom compounds, **33** 401
in latex compounds, **34** 834
natural rubber in vulcanization, **31** 315
reaction, with alkali, **35** 659
and monosulfide, **33** 398
heats of formation, **35** 661
vulcanization, **31** 559; **32** 721; **33** 394, 398, 401, 412
unpaired spins during, **34** 318
Tetrahydrofuran, **36** 296
Theories of reclaiming, **31** 599
Theory, of additivity of relaxation spectra, **30** 493
of adhesional friction of rubber, **39** 306
of adsorption, **39** 36
of branching and elasticity, **39** 1472
of concentrated polymer solutions, **40** 1
of dynamic rubber friction, **39** 320
of entanglements and flow, **39** 1460
of entanglements and modulus, **39** 1489
of entropy in elasticity, **40** 777
of failure, **40** 710
of filler reinforcement, **31** 361; **35** 857; **40** 1330, 1337
of heat flow, **40** 36
of large longitudinal deformators, **40** 506
of latex coalescence, **40** 1246
of network chain density, **40** 1560
of ozone resistance, **40** 635
of polymer solution, **39** 149
of random filler dispersions, **35** 819
of random reorganization, **40** 769
of rubberlike elasticity (Review), **38** 1039
of strain birefringence, **39** 1436
of strength, **35** 178
of stress strain properties, **40** 1060
of stress strain properties, of filled polymers, **40** 801
of tensile strength distribution, **39** 340
of thermal conductivity of polymers, **39** 841
of tire contour integral, **40** 961
for tire sections, **36** 11
of vibration damping in rods, **39** 740
of viscous flow, polystyrene, **40** 1516
of Ziegler polymerization, **32** 597
Thermal conductivity, anisotropic, **39** 678
of high polymers, **36** 75; **39** 841, 858, 863
of rubber, **39** 126
of rubber, and heat capacity, **32** 444
Thermal decomposition and TGA, **37** 937
Thermal degradation of acrylonitrile and butadiene polymers and copolymers, **32** 748
in abrasion, **31** 925
of polyurethans, **39** 461; **40** 1212, 1230
Thermal diffusivity in rubber, **40** 36
Thermal expansion, apparatus, **34** 705
and crosslinking in natural rubber, **39** 408
of elastomers, **37** 134, 154
Thermal neutron vulcanization, **33** 1083
Thermal oxidative plastication, catalysis, **33** 790
Thermal stability, of vulcanizates, **37** 792
Thermodynamics, of concentrated polymer solutions, **40** 1
of crystallization under stress, **39** 685
of natural rubber elasticity, **37** 606
of natural rubber and isoprene (Review), **39** 143
racked rubber, **31** 485
of rubber and benzene solutions, **33** 798
of rubber-solvent systems, **38** 314, 325
of shrinkage of natural rubber, **31** 485
of swelling, **39** 651
Thermogravimetry, balance for, **37** 934
of polymers, **37** 937; **40** 445
Thermomechanical studies, of molecular weight, **37** 99
of polyisobutylene, **37** 365
of polymers, **37** 355
Thermomechanical testing of vulcanizates, **37** 128
Thermoosmosis and permeability, **40** 1409
Thermovulcanization, **31** 132
Theta solvents, for polybutadiene, **39** 609
for SBR, **39** 622
Thiazoles and dithiocarbamates as antioxidants, **36** 887
Thickness, hardness, and modulus, **39** 1520
Thiobisamines, reactions with olefins, **32** 577
Thiocarbamylsulfenamide accelerators, **35** 644
Thiokol in vibration damping, **39** 740
Thiol acids, modification of rubber, **33** 1
Thiol acids, addition products with natural rubber, **31** 519
Thiol-amine reagent, **40** 100
Thiuram disulfides in vulcanization, **32** 566
disulfide vulcanization, efficiency of, **31** 559
sulfides in nitrile rubber vulcanization, **32** 128
vulcanization, **32** 139
vulcanization, function of oxides, **32** 150
vulcanization kinetics, **31** 315
Thixotropy of colloid systems, **40** 1505
Tires, adhesion of components, **33** 384, 556
antiozonants in, **34** 973
carcass adhesion, **32** 503, 513
contour integral, **40** 961
cord, bias filament rupture, **39** 1382
cord fatigue, **40** 1014
cornering force and slip, **32** 490

diffusion of sulfur in, **32** 770; **35** 621
durability testing, **38** 158, 741, 832
energy losses in, **38** 400
fabric fatigue in, **38** 832
flatspotting of, **38** 999; **40** 947, 1139
friction on roads, **40** 684
of tread rubber, **37** 878
groove cracking, **38** 719
groove cracking and reagglomeration, **36** 754
heat buildup, **31** 1
heavy service treads, **39** 452
hysteresis in abrasion, **33** 857
mechanics, **40** 271
polysulfides and cracking, **39** 1526
radioactive isotope in rating treadwear, **40** 969
rolling resistance of solid, **33** 302
skid resistance, **38** 840
temperature coefficient of vulcanization, **35** 92
theory of shape, **36** 11
tread wear, **35** 339, 354
at controlled slip, **35** 1342
of effect of temperature on, **31** 650
resistance, **38** 457
wet friction, **40** 984
Titanium dioxide, effect, on EPT stability, **39** 1347
Titanium trichloride, oxidation, **37** 128
Traction and braking, **33** 158
Transfer agents, radioactive, **32** 706
Transitions, in natural rubber, **40**(3)xxv
in natural rubber, first-order, **39** 206
in neoprene, **34** 668
in polybutadiene, **38** 343, 347; **39** 193
in polyisobutylene, **31** 499
second order, by DTA, **39** 1513
Transition temperatures, **36** 1303
of elastomers, **34** 1193, 1201
and orientation, **39** 1403
of polymers and feta ray absorption, **36** 459
relation to polymer structure (Review), **36** 1303
Transmissibility, in rubber mountings, **32** 1209
and waves in rubber (Review), **37** 1190
Tread stocks, skid resistance of, see also tire, **40** 25
Tread wear, and glass transitions, **40** 590
measurement with radioactive isotopes, **40** 969
Treloan network model, **40** 1060
Triazine elastomers, **39** 1178
synthesis of, **39** 1175
Triisocyanates in EPT, **37** 927
Triphenylphosphine as analytical reagent, **40** 100
Triphosphopyridine nucleotide in rubber synthesis, **38** 450
Tritium, in study of antioxidant action, **35** 692
Two-network hypothesis, **40** 621, 1060
Two stages in network formation, **31** 592

Ultimate elongation, and aging, **33** 502
Ultimate properties, **31** 19
of SBR, **34** 897
Ultracentrifuge molecular weights, **38** 817
Ultrathin sections, preparation of, **36** 799
Ultraviolet, light aging of natural rubber, **34** 686
spectra and copolymer structure, **40** 427
spectroscopy in vulcanization, **37** 709
Uni-rotor mixer, **31** 667
Unsaturated monomers, addition to rubber, **36** 282
Unsaturation, determination, **40** 238
in butyl, **34** 205
in EPT, **40** 936
effect of radiation, **39** 992
of EP copolymers, **39** 940
radiochlorine analysis, **36** 1071
"Upturn" in non-Newtonium viscosity, **39** 631
Urea-urethan elastomers, **38** 140
Urethan cleavage in polyurethan, **40** 1230
Urethan rubbers—see also Polyurethan rubber,
peroxide vulcanization of, **40** 149
polymer structure and properties, **33** 1259
tack, **39** 974

Vacuole formation, on stretching, **34** 123; **40** 1337
in blends, **40** 350
Vacuum, effects on elastomers, **39** 1127
Valves, artificial heart, **39** 1276
Vapor, swelling of rubber in, **40** 1166
Vibration, damping, **35** 798
insulation, **32** 1209
isolation, **34** 148
with EPT, **38** 967
and wave effects, **39** 740
Vinyl acetate rubber peroxide vulcanization, **40** 149
Vinyl alkyl ethers, vulcanization of polymers, **36** 1159
Vinyl monomers in rubber latex, **33** 825
Vinyl pyridine rubber, interaction, with fillers, **36** 975
metal halides in, **35** 453
permeability of, **35** 153, 166
Vinyl chloride, polymerization in presence of rubber, **34** 760
Vinylidene fluoride copolymers, with hexafluoroethylene, tensile strength of, **40** 544
stress relaxation, **40** 621
Viscoelasticity—see also Damping, **36** 1422, 1459
of amorphous elastomers, **36** 682; **37** 285
and aging, **36** 50
apparatus for measuring, **35** 937
and birefringence, **40** 748
and failure, **40** 710
of filled elastomers, theory, **40** 1330, 1337
and flatspotting, **40** 1139
and friction, **37** 386
influence of carbon black, **35** 918
of macromolecules, theory, **40** 1446
of natural rubber, **39** 408
of natural and butyl rubber at high extensions, **35** 927
nonlinear, **40** 1111
of open cell foams, **39** 389
of oriented networks, **40** 650
and polymer fracture, **40** 1036, 1049
of polyurethans, **39** 375
of propellant elastomers, **35** 291
of raw and filled polymers, **35** 326
and relaxation, **37** 617
and resilience, **34** 555
of segmented elastomers, **40** 1105
short-time processes, **40** 1426
of silicone rubber, **40** 1483
and strength, **37** 808; **40** 694
of styrene divinylbenzene copolymers, **40** 476
theory of, **36** 1422; **39** 1472
Viscometry, of elastomers, **38** 769
of high polymers, **31** 681
Viscosity
and Deborah number, **40** 1426
determination with oscillating disk rheometer, **36** 451
of elastomer blends, **31** 244
of filled elastomers (in review), **38** 1070
and flow of polymer solutions, **39** 1411
oil, black, and SBR, **40** 463
and molecular weight, **40** 806
molecular weight and entanglements, **40** 522
and molecular weight of polyisoprene, **36** 1035
and molecular weight on hot mastication, **33** 91
of plasticized rubbers, **40** 734
of polybutadienes, **38** 881, 893, 907
of polyisobutylene, **35** 326
and polymer entanglement, **39** 1460
of polymers, **37** 627
of polymer solutions non-Newtonian, **39** 631
of rubber after milling, **31** 73
of rubbers in solvent-nonsolvent systems, **32** 539
of SBR, **38** 961
of siloxane polymers, **40** 1483
and structure on mastication, **36** 102
Viscurometer, **37** 434
Viton B, tensile envelopes of, **37** 792
Vitrification of rubber, **34** 1193
Voight spring and dashpot model, **40** 1330

Volatility, of antioxidants and antiozonants, **37** 210
 of phenyl-β-naphthylamine, **34** 807
Volume,
 changes in stretching, **31** 505, 513; **34** 123
 free, in natural rubber, **39** 408
Vulcanizates, from bis-azo compounds, **32** 544
 branching and elasticity of, **39** 1472
 deformation of filled, **35** 572
 structure, **35** 113; **36** 647
  relaxation and tensile strength of, **36** 815
  and aging, **39** 1565
  and sliding friction, **35** 371
  and stress of relaxation, **39** 1625
 swelling of, **37** 6
Vulcanization, **31** 117, 539, 548
 accelerated by benzothiazole disulfide, **36** 863
  review of in Russia, **35** 1
  with thiurams, **32** 139
 with accelerator combinations, **33** 373
 accelerators, **31** 329, 343; **32** 174; **35** 1360
  complexes of with zinc carboxylates, **39** 1115
 activators, complexes with accelerators, **39** 1115
 and adhesion, **33** 384; **34** 879; **35** 1041
 with cumyl peroxide, **38** 560
 curing system, fate, **37** 635, 650
 agents, exchange of sulfur in, **34** 588, 600
 bis-thioamines, **32** 577
 of butyl rubber, **35** 705
  with phenol formaldehyde resins, **33** 229
 of carboxylic rubbers, **36** 568, 575, 931
 changes during, **34** 777
 characteristics, **31** 105
 of chlorosulfonated polyethylenes, **36** 882, 963
 coagents in EPR, **37** 229
 crosslinking during aging, **38** 374
  low unsaturation rubbers, **38** 590
 with diethylbenzothiazole sulfenamide, **33** 361
 dimethyloctadiene and mechanism of, **35** 633
 diphenylmethane as model, **31** 762, 769, 773, 779; **34** 648; **35** 484, 491
 diffusion in, **32** 770
 and dynamic properties, **32** 662
 effect of, fillers, **33** 326
  molecular weight, **31** 592
  activation, **31** 329
  compounding variables on network, **37** 673
  natural rubber fatigue, **39** 785
  physical properties, **39** 1359
  PRI, **39** 1608
  shape, **31** 562
  zinc oxide, **32** 774, 780
 efficiency with thiuram disulfides, **31** 559
 of elastomers, **31** 286, 301, 315; **37** 910
 of elastomers with dithiocarbamates and sulfur, **31** 301
 estimation of, from swelling, **37** 563, 571, 576
 of ethylene propylene rubbers, **35** 133, 1083, 1091
  with perhaloolefins, **39** 1094, 1105
 of ethylene propylene terpolymers, **40** 569
 fluid-bed, **36** 875
 free electron spins in, **33** 1005
 by free radical reactions, **33** 199
 of hard rubber, **32** 195
 by heat, **31** 132
 under high pressure, **33** 1019
 with high sulfur, **37** 221, 225
 at high temperature, **34** 319, 571
 infrared analysis of, **35** 57; **36** 262
 infrared changes during, **31** 719
 infrared evidence from deuterio polymers, **36** 219
 kinetics, **36** 835; **37** 557
  MBT accelerated, **31** 117
  sulfur disappearance, **34** 606
 loops in networks, **39** 1489
 with maleimides, **35** 520, 528; **38** 352
 measurement of shear modulus, **31** 105
 mechanisms, **33** 342
 metal oxides in, **31** 527
 model reactions, **33** 211, 217
  for peroxide, **35** 118
 with molecular sieves, **37** 714
 of natural rubber, with benzoyl peroxide, **39** 768
  with MBT and sulfur, **31** 548
  mechanism of, **38** 1
  with nitroso compounds, **35** 141
  with sulfenamides, **38** 176, 189
 of neoprene with a dinitroso compound, **34** 658
 and network structure, **40** 100
 of oriented natural rubber, **31** 469; **40** 650
  by radiation, **31** 98
 with oxidizing agents, **32** 220
 of Perbunan, **32** 128
 peroxide, of EVA, **40** 149
 peroxide, mechanism of, **40** 149
 peroxide, of natural rubber, **38** 367
 peroxide, of silica filled stocks, **34** 729
 of polyethers and EPR with radiation and sulfur **36** 248
 of poly(vinyl alkyl ethers), **36** 1159
 of polyurethans, **34** 629
 in presence of MBT, **31** 751
 and properties of polyether rubbers, **40** 1421
 by radiation, **32** 785; **38** 94
  and hydrogen yield, **34** 735
  of silica filled stocks, **34** 729
  with radioactive MBT, **31** 348
 with radioactive MBTS and sulfur, **34** 334
 reactivity of synthetic rubbers in, **36** 236
 and relaxation of silicone rubbers, **40** 629
 and relaxation of Viton B, **40** 621
 with resins, **36** 268
 retarders, **35** 501
 role of zinc oxide, **31** 315
 of rubber (Review), **31** 1
  with sulfur, **30** 1291; **31** 1035; **34** 1306
 with S^{35}, **33** 181
 of SBR by gamma radiation, **34** 265
 scission during, of natural rubber, **37** 904
 and scorch, **32** 295; **36** 1153
 scorch-delayed, **37** 689
 and second-order transition, **35** 776
 of silicone rubber, **38** 924
 of silicone gum, **40** 722
 and stress softening, **40** 840
 stress strain properties, **40** 1060
 and sulfur combination, **40** 849
 sulfenamide accelerated, **33** 834; **36** 844
 with sulfur alone, **33** 1051
 with sulfur and amines, **31** 286
 with sulfur and DPG, **33** 834
 in thermal neutron field, **33** 1083
 with thiuram disulfide, **31** 539; **32** 566, 721; **33** 394, 398, 412, 491
 with thiurams, **33** 335
 temperature coefficient, **35** 76, 92
 vulcameter for cure determination, **38** 757
 Vulkameter studies, **37** 698

Water, absorption by elastomers, **36** 621
 effect of, on polyurethans, **39** 1308, 1328
 permeation through rubber, **39** 1298
 vapor permeability and rubber structure, **39** 751
Wave effects in rubber mountings, **39** 740
Waxes, as antiozonants, **32** 379
 evaluation for ozone protection, **34** 990
Wear, see also Abrasion
 of passenger car tires, **31** 166
 resistance, apparatus, **35** 339, 354
  estimation, **35** 229
 of tire treads, use of radioactive isotopes, **40** 969
Weathering, of elastomers, **32** 1143
 of elastomers, EPT, **39** 1347
Weight, see Molecular
Weissenberg number, **40** 1126
 and polymer flow, **40** 1426
White pigments in rubber, **36** 158
WLF shift, strain dependent, **39** 1421, 1428
Work of rubber deformation, **32** 40
Würster salts from antiozonants, **39** 1584

Xenon, diffusion, through rubber, **40** 1156, 1409
X-ray, analysis for zinc oxide, **33** 890
  diffraction after radiation damage, **34** 250
  melting point determination, **40** 788
  microradiography of filler dispersion, **35** 228

Yarns, and cords, rubber models, **34** 1169
  covered-rubber, **35** 959
Young's Modulus, and hardness, **31** 896
  index and glass transition, **40** 590

Ziegler, catalysts (in Review), **36** 1571
    for isoprene polymerization, **34** 361, 986
  -Natta catalysts, **40** 1529
    polymerization of ethylene and propylene, **35** 1101
    polymerization, theory of, **32** 597
Zinc dimethyldithiocarbamate as antioxidant, **32** 739
Zinc oxide, and cure, **39** 633
  determination of by x-ray analysis, **33** 890
  effect on EPT stability, **39** 1347
  and rate of sulfur reaction, **32** 774
  and structure of vulcanizates, **32** 780
  in thiuram vulcanization, **31** 539
  in vulcanization, **31** 315, 526
Zinc radioactive, in tread wear rating, **40** 969
Zinc stearate and "reagglomeration", **37** 338
Zinc sulfide and groove cracking, **36** 754

36 = 1963, **37** = 1964, **38** = 1965, **39** = 1966, **40** = 1967